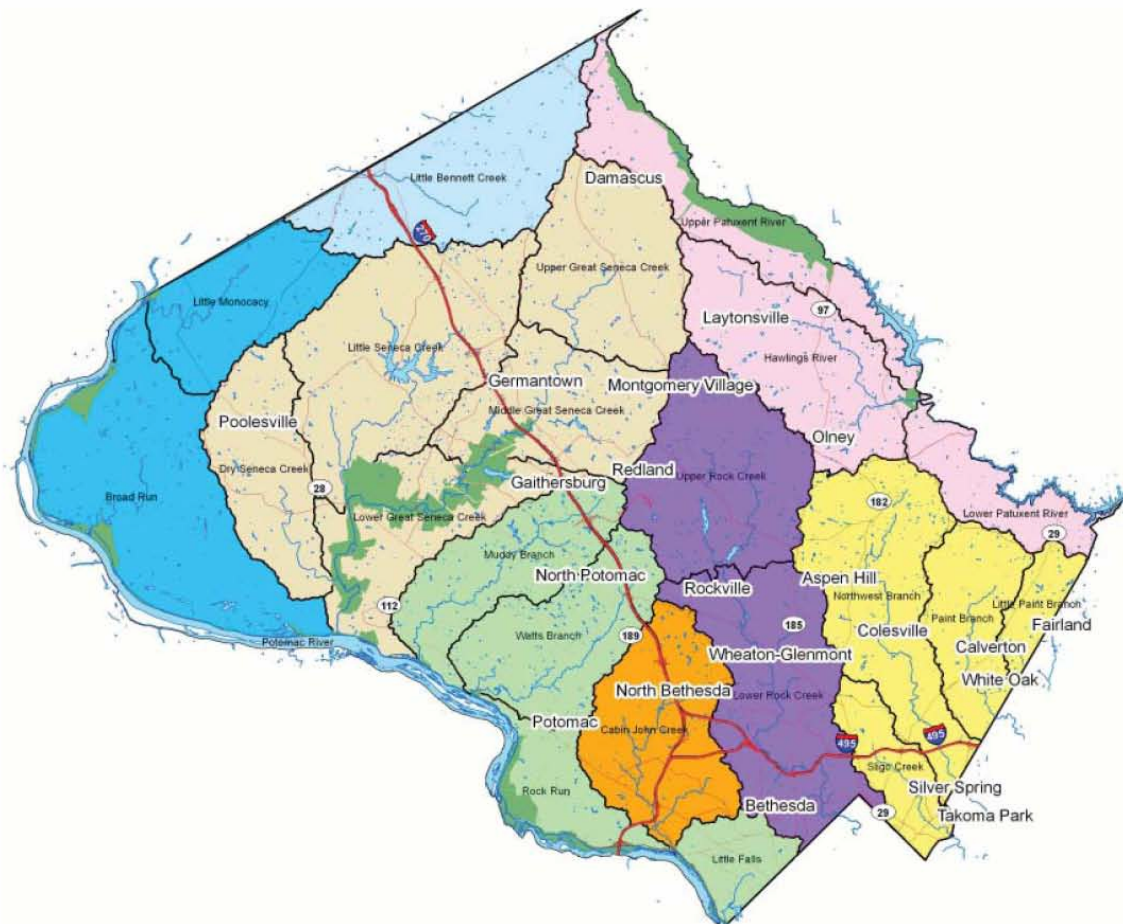




# Annual Report for 2010

## NPDES Municipal Separate Storm Sewer System Permit



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## **LIST OF ACRONYMS**

<b>BMP</b>	Best Management Practice
<b>CIP</b>	Capital Improvement Program
<b>USACE</b>	U.S. Army Corps of Engineers
<b>DEP</b>	Department of Environmental Protection
<b>DGS</b>	Department of General Services
<b>DPS</b>	Department of Permitting Services
<b>DOT</b>	Department of Transportation
<b>EPA</b>	U.S. Environmental Protection Agency
<b>ESD</b>	Environmentally Sensitive Design
<b>GIS</b>	Geographic Information System
<b>IBI</b>	Index of Biological Integrity
<b>MDE</b>	Maryland Department of the Environment
<b>MDP</b>	Maryland Department of Planning
<b>MEP</b>	Maximum Extent Practicable
<b>MNCPPC</b>	Maryland National Capital Park and Planning Commission
<b>MS4</b>	Municipal Separate Storm Sewer System
<b>NPDES</b>	National Pollutant Discharge Elimination System
<b>USGS</b>	U.S. Geological Survey
<b>WSSC</b>	Washington Suburban Sanitary Commission

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**ATTACHMENT A. COMPACT DISK WITH THE FOLLOWING ELECTRONIC FILES**

APPENDIXA.doc                      Annual Report Databases

MDENPDES10.mdb                      Required information in ACCESS 2000 database

- A.      SDI2011.zip   GIS Storm Drain System Mapping 1998 through February 2011
- B.      Urban Best Management Practices Associated with GIS Coverage
- C.      Impervious Surfaces and Watershed Restoration
- D.      Watershed Restoration Project Locations Associated with GIS
- E.      Monitoring Site Locations with GIS Coverage
- E.1.   Monitoring Site Locations- Use for Multiple Land Use Values in the Drainage Area
- E. 2.   Monitoring Site Locations- Use for Multiple Stormwater BMPs in the Drainage Area
- F.      Chemical Monitoring (*to be submitted for FY11*)
- G.      Pollutant Load Reductions associated with GIS Coverage (*to be submitted after MDE approval of Countywide Coordinated Implementation Strategy*)
- G.1.   Additional Pollutants
- H.      Biological and Habitat Monitoring
- I.      Illicit Discharge Detection and Elimination
- J.      Responsible Person Certification
- K.      Quarterly Grading Permit Information Associated with GIS Coverage
- L.      Fiscal Analysis

Appendix B. MC and MCPS MOUs 2010\_0122.pdf

Appendix C Implementing\_ESD\_Report\_FINAL\_110910.pdf

Appendix D BreewoodFactSheet.pdf

Appendix E BreewoodNPDES rationale\_revised 2009.pdf

Appendix F 2009\_SPA\_Annual\_Report\_DISTRIBUTE\_PRINT.pdf

Appendix G Property Management

*NPDES WATER CHEMISTRY MONITORING IN LOWER PAINT BRANCH WATERSHED.*

Versar, Inc.. June 21, 2009.

Countywide Coordinated Implementation Strategy. draft. February 2011.

Watershed Implementation Plans. draft. February 2011.

Anacostia

Cabin John

Great Seneca (including Clopper Lake)

Lower Monocacy

Muddy Creek/Watts Branch

Patuxent

Rock Creek



**MONTGOMERY COUNTY MARYLAND  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) DISCHARGE PERMIT**

**I. BACKGROUND**

This submission fulfills the requirement for an annual progress report to the Maryland Department of the Environment (MDE) as specified in Part IV of Permit Number 06-DP-3320 MD0068349 (the Permit). The five-year Permit term began February 16, 2010 covering stormwater discharges from the municipal separate storm sewer system (MS4) in Montgomery County, Maryland. Significant accomplishments in the County's stormwater management program during the period January 1, 2010 through July 1, 2010 are highlighted in the Overview. The report itself has been organized based on the headings in the Permit's Section III to document how specific required elements of the County's stormwater management program are being implemented. The database format for electronic submission is included on compact disc (CD) in Attachment A. This includes the field names, formats, and explanatory information provided by MDE.

The Montgomery County Department of Environmental Protection (DEP) has primary responsibility for the majority of the requirements of the Permit, including interagency coordination, annual reporting, source identification, discharge characterization, monitoring, stormwater facility inspection and maintenance enforcement, illicit discharge detection and elimination, watershed public outreach, and watershed restoration plans, and solid waste services. The Department of Permitting Services (DPS) is responsible for the County's Stormwater and Sediment and Erosion Control Program. The Department of Transportation (DOT) is responsible for storm drains, road and roadside maintenance, solid waste disposal, and the General Permit for Storm Water Discharges Associated with Industrial Facilities at the County-owned vehicle and road maintenance facilities.

The MDE modified the County's Permit effective January 26, 2004 to add six small localities as co-permittees for coverage under the Phase 2 of the National Pollutant Discharge Elimination System (NPDES) MS4 Permit Program. There were five municipalities: the Towns of Chevy Chase, Kensington, Poolesville, and Somerset, and Chevy Chase Village; and one special tax district, the Village of Friendship Heights.

This is the first report in this current permit cycle (February 16, 2010- February 15, 2015) and covers the first 6 months of 2010; January 1-June 30. Future MS4 Discharge Permit reports will be submitted following the County's fiscal year which runs July 1 through June 30. Thus the next permit submitted on February 16, 2012 will cover the County's FY 2011, which will run from July 1, 2010 through June 30, 2011.

## **II. OVERVIEW**

### **Permit Administration**

An updated organization chart and contact information is shown in Table III-A1 and enclosed electronically on the CD in Attachment A. These are contacts as of January 2011.

### **Legal Authority**

During 2006, the County obtained legal authority to enforce its water quality ordinance within the City of Takoma Park boundaries. In 2004, the Office of the County Attorney had determined that the State of Maryland Code prohibited the County from exercising its authority over the stormwater management system within the City of Takoma Park "unless the City and the County otherwise agree." This prohibition had included investigations and enforcement activities for water quality complaints within the City of Takoma Park.

### **Source Identification**

The Permit requires Montgomery County to inventory and map using a geographic information system (GIS) the potential pollutant sources and means of conveyance into receiving streams and other water bodies. The Department of Permitting Services (DPS) has digitized storm drain features for approximately 48 public and 105 private storm drain permits since last year. The effort added about 2,182 points (headwall, manhole, inlet, and outfall) and 2.725 lines (channel, culvert, and pipe), respectively, to the existing storm drain inventory. We also added additional drainage areas to the inventory. The inventory is up-to-date or ahead of storm drain point and line features that are either constructed or under construction.

The delivered storm drain inventory (SDI2011.mdb in the SDI2011.zip file) is in the ESRI Personal GeoDatabase format, i.e., Microsoft Access 2000 Database. Each storm drain feature type is a feature class. Each feature class is a table in the database including both spatial and attribute information. This storm drain inventory contains data completed by DPS as of February 15, 2011.

The County's Urban Best Management Practices database as of February 16, 2011 with associated coverage is included in Attachment A, as is the County's impervious surfaces, monitoring locations and locations of watershed restoration projects.

### **Discharge Characterization**

The Permit requires that Montgomery County use discharge characterization monitoring gathered since early 1990s and additional monitoring data required under the Permit to assess "the effectiveness of stormwater management programs, County watershed restoration projects, and to document progress towards meeting waste load allocations

(WLAs) indicated in the Total Maximum Daily Loads (TMDLs) approved by the U.S. Environmental Protection Agency (EPA) for watersheds or stream segments located in the County”. Details about this monitoring can be found in Part III. H.

### **Management Programs**

#### **Stormwater Facility Maintenance:**

The County continues to inspect BMP facilities to assess repair and maintenance needs, and documents the number of maintenance inspections, enforcement actions, and maintenance inspection schedules.

#### **Stormwater Facility Permitting**

The Permit requires the County to implement the stormwater management design policies, principles, methods, and practices found in the *2000 Maryland Stormwater Design Manual* and provisions of Maryland’s *Stormwater Management Act of 2007*. The Permit requires the County to modify County SWM ordinances, regulations and new development plan approval processes within one year in order to implement ESD to MEP. It also requires the County to review local codes and ordinances to identify impediments to and opportunities for promoting ESD to the MEP within one year, and to remove those impediments within 2 years of the Permit’s issuance. The County must also report the modifications made or needed to be made.

County consultants prepared a final report, [Implementing Environmental Site Design in Montgomery County](http://www.montgomerycountymd.gov/content/dep/downloads/Implementing_ESD_Report_FINAL_110910.pdf),  
[http://www.montgomerycountymd.gov/content/dep/downloads/Implementing\\_ESD\\_Report\\_FINAL\\_110910.pdf](http://www.montgomerycountymd.gov/content/dep/downloads/Implementing_ESD_Report_FINAL_110910.pdf)

which summarizes how the County's codes, regulations, programs, and policies may need to be updated to allow the use of Environmental Site Design (ESD) and low impact development techniques to the maximum extent practicable (MEP). The draft report was reviewed by the public and by representatives from the Department of Environmental Protection, Department of Permitting Services, Department of General Services, Department of Transportation, Department of Fire and Rescue Services, Maryland-National Capital Park and Planning Commission, and Montgomery County Public Schools. In early 2011, DEP will begin coordination with the appropriate County agencies to begin to draft legislation changes. This effort will be coordinated with the MNCPPC Zoning Code Rewrite that is currently underway.

### Erosion and Sediment Control

The County continues to conduct “responsible personnel certification training” three times a year as required by the Permit. The County also continues to report quarterly information on earth disturbances exceeding one acre or more. There have been no program improvements identified in any MDE evaluation of the County’s application for the delegation of erosion control and sediment control enforcement authority.

### Illicit Discharge Detection and Elimination (IDDE)

In the past, DEP targeted outfalls in watersheds identified by the Montgomery County’s Countywide Stream Protection Strategy as “impaired” for further investigation to meet the Permit requirements for IDDE. In assessing the screening results, DEP found that targeting stream reaches identified as impaired by factors other than physical habitat has not resulted in identifying what ‘other’ factor might be causing that impairment.

Beginning with the outfall screenings for 2009-2010, DEP wanted to focus on areas within the County where there are documented or potential illegal connections which ‘routinely’ produce water quality problems. The Center for Watershed Protection (CWP) approached DEP as a potential partner in a pilot project to facilitate and enhance IDDE investigations in the County. The CWP and DEP partnered with watershed groups, such as the Friends of Sligo Creek, the Audubon Naturalist Society, and the Anacostia Watershed Society and other agencies including the WSSC, M-NCPPC, and DC DEP, to conduct outfall screenings in December 2010. The field screening teams investigated over 150 outfalls covering most of the Sligo Creek watershed. DEP feels that the focused approach outlined in the CWP’s IDDE Manual produced better results than previous investigations, and intends to incorporate many of the CWP protocols in the future. Results of the pilot program were not yet available for this report, and will be included in the next MS4 Permit report due 2012.

### Trash and Litter

This submittal includes the County's Strategy to meet the Potomac Trash Free treaty goals and the MS4 waste load allocations for the proposed Anacostia Trash TMDL. Baseline programs will be re-assessed to evaluate opportunities for additional, cost-effective investments in litter removal.

### Property Management

Yearly inspections of County facilities with NPDES general stormwater discharge coverage generally show adequate attention to reducing pollutant runoff from the facilities. Attention to basic housekeeping such as daily sweeping, materials handling, and small spill management still needs to improve. In 2008, the County hired a Consultant to develop and update the 2000 Pollution Prevention Plans (SWP3) for all facilities. In 2010, updated Pollution Prevention Plans, Stormwater Pollution Prevention Plans, and Spill Prevention, Control and Countermeasures Plans were developed for the

Colesville Highway Maintenance Facility and the Kensington Small Transit Facility. DEP's Division of Solid Waste updates their Stormwater Pollution Prevention Plans annually for the Shady Grove Processing Facility, the Oaks Landfill, and the Gude Landfill. All the County agencies; DOT, DGS, and DEP, delivered yearly training on the NPDES requirements and implementation to all the agency employees involved in operation at the facilities.

#### Road Maintenance:

The County streetsweeping program continued in FY 2010. Because of the lower amounts of material collected per dollar spent sweeping residential roads, effort continue to be focused on arterial routes although DEP still sweeps priority residential routes at least once each year. The 1246 miles of priority residential routes tend to produce more material than the other county residential routes.

#### IPM

The County's roadside weed spraying program will now be conducted by Montgomery Weed Control Inc. Montgomery Weed Control is a cooperative weed control program between Montgomery County D.E.D. Agricultural Services Division and the Maryland Department of Agriculture, Plant Protection and Weed Management Section.

The program function is to assist farmers, landowners, businesses and government agencies in the control of noxious and invasive weeds and enable them to comply with the Maryland Noxious Weed Law. The purpose of the program is to assist in the control and eradication of noxious weeds in Montgomery County.

#### Application of sand and salt

The DOT reported a total of 169,633 tons of sand and salt applied to County roadways during FY2010. This amount is unusually high and was influenced by severe weather conditions that affected the region in the winter of 2010.

#### Public Education and Outreach:

The DEP continues to support its Illegal Dumping Hotline 240-777-3867 ("DUMP"). The County has also implemented a call center that allows citizens to call one number (311) for all concerns in the County, including illicit discharges and spills.

The position dedicated to watershed outreach was abolished in 2006 and remained vacant until a watershed outreach planner position was created and filled in December 2009. This position was dedicated to implementing outreach programs associated with the third round of the MS-4 permit as well as provide outreach support to the watershed management division programs such as the RainScapes Program, Biomonitoring, Stormwater Maintenance and Capital improvement projects

Due to this new hire, the DEP made further steps in meeting its MS4 permit by getting involved in 20 outreach events including events focused around minorities such as the Asian American Community Resource Fair. Through these events, DEP staff was able to directly educate over 1,400 residents and influence many more by their presence.

#### Watershed Assessment

The County is continuing its systematic assessment of water quality, stream resource conditions, and habitat modification within all of its watersheds. During 2004, the County began the watershed inventory in the Great Seneca and Muddy branch watersheds as cooperative efforts with the USACE and the City of Gaithersburg. These areas represent roughly one-third of the total County land area and include drainage from the densely developed areas of Gaithersburg and Germantown. This study is continuing and will be completed in 2011. In 2008, the County in partnership with the USACE, Prince Georges County and the District of Columbia began a reassessment of the Anacostia River watershed. That study was completed in February 2010.

Inventory of LID Retrofit Opportunities & Stormdrain Systems at Montgomery County Public Schools and Facilities Phase I inventoried, assessed and prioritized LID opportunities for 70 county schools and other Montgomery County Public School (MCPS) facilities. Based on the assessment, an inventory of projects were developed listing all potential opportunities to capture, reuse, treat or infiltrate stormwater runoff from the site. A stormdrain inventory was also performed during the site assessment for each facility. The stormdrain data collected will integrate into the County's existing stormdrain GIS database.

#### Watershed Restoration:

##### **Hollywood Branch Stream Restoration Project**

The Hollywood Branch Stream Restoration Project will mitigate stream degradation caused by past suburban development made without adequate stormwater controls. Hollywood Branch is located in the suburbs of eastern Montgomery County, Maryland, and is a second order tributary to Paint Branch (a tributary of the Anacostia River).

#### Assessment of Controls

In 2009, during the reissuance of the County's MS4 permit, The County determined that the Stewart April Lane Tributary, used to assess stormwater controls in prior County MS4 permits, would no longer be a suitable site to demonstrate the effectiveness of stormwater controls required by the Permit. The County then identified the Breewood Tributary, a 45-acre catchment within the Piedmont physiographic region, for the implementation of an innovative comprehensive management approach which will link upland watershed source control measures with stream and wetland restoration, low impact design techniques (LID), and vegetated control practices to address major sources of water quality impacts.

### Watershed Restoration Assessment

A biological monitoring station was established in the Breewood Tributary. The station is upstream of Sligo Creek Parkway, with the 75 meter station's centerpoint located opposite the end of Tenbrook Drive (Figure XX). The location was selected to be downstream of the many restoration improvements planned for the Breewood Tributary watershed, yet above Sligo Creek Parkway. This is to avoid any confounding affects from the Parkway, an adjoining paved vehicle parking lot, playground and their yearly maintenance. The station will be monitored in the spring of each year for benthic macroinvertebrates and late summer/early fall for streamside salamanders. Two additional stations downstream of the Breewood Tributary will also be monitored every year as well.

### StormWater Management Assessment

#### Design Manual Monitoring

The permit requires that the County shall continue monitoring in the Clarksburg Special Protection Area for determining the effectiveness of stormwater management practices for stream channel protection.

The thirteenth [annual report on the Special Protection Area](http://www.montgomerycountymd.gov/content/dep/downloads/2009_SPA_Annual_Report_DISTRIBUTE_WEB.pdf) (SPA) program summarizes the results of all monitoring completed in the four SPAs through 2009, including the Clarksburg Special Protection Area. The report can be found here on in the electronic submission included with this report as Appendix F:  
[http://www.montgomerycountymd.gov/content/dep/downloads/2009\\_SPA\\_Annual\\_Report\\_DISTRIBUTE\\_WEB.pdf](http://www.montgomerycountymd.gov/content/dep/downloads/2009_SPA_Annual_Report_DISTRIBUTE_WEB.pdf).

During 2009, stream conditions changed little in the SPAs from those reported for 2008. Out of 48 stations monitored, 46 stations (96%) had no change in stream conditions from 2008. In 2008 and 2009, there was a decreased amount of development reflecting the economic downturn which may have allowed less active construction sites to stabilize and for completed developments to convert to SWM. Many developments in Clarksburg have been completed and former sediment and erosion control devices have been fully converted to stormwater management BMPs. This rate of conversion was faster then in previous years.

#### Recommendations and Conclusions

During 2011, the DEP will move forward to propose changes in Chapter 19 Article IV to provide DEP with direct management of BMP monitoring. This would provide more consistency and reduce some of the problems encountered to date with monitoring in the SPAs. These code changes will be implemented as soon as possible. At the same time, the Maryland Department of the Environment will be completing review and revision of the State's S&EC regulations. Changes under consideration include requirements for faster conversion from S&EC to SWM, stricter phasing stages of construction to allow

greater focus on soil stabilization, limiting the acreage allowed of exposed soils, stricter utility S&EC, and limiting of cut and fill activities to retain natural drainage patterns. The DPS is representing Montgomery County on the statewide workgroup. Montgomery County has traditionally been the leader in progressive S&EC regulations and expects to exceed requirements of the new MDE regulations.

#### Program Funding:

The Permit requires that the County submit annual expenditures for the capital, operation, and maintenance expenditures in database format specified in Permit Section Part IV. The required database is included in electronic format on CD in Attachment A. During FY10, the reported costs associated with Permit requirements was \$27,415,836.

#### TMDL

Submitted in this report is the Montgomery County Coordinated Implementation Strategy (Strategy) for meeting the 20% watershed restoration goal, wasteload allocations for EPA-approved TMDLs, and the public outreach and stewardship workplan. The County will initiate a 30-day comment period as required by the Permit and is holding a public meeting on March 10, 2011 to present findings of the Strategy.

Also submitted in this Annual Report are the individual watershed implementation plans for making progress towards wasteload allocations for EPA-approved TMDLs. A summary of these seven implementation plans are included in this document.

#### **Special Programmatic Conditions**

##### Tributary Strategy-

The County is continuing to work with State agencies and other affected stakeholders for the development of the Phase 1 and Phase 2 WIPs to meet Chesapeake Bay restoration goals. In January 2011, the DEP agreed to take the lead to convene a meeting of local affected stakeholders and work with the State to develop the Phase 2 WIPs for the entire County. As of February 16, 2011, the MDE has not provided the loads allocation by source necessary for the Montgomery County stakeholders to begin next steps in developing the WIP.

The submitted Strategy showed that the Bay TMDL wasteload targets for urban MS4 areas from the Maryland Phase 1 Watershed Implementation Plan would be met for all pollutants in 2017 and easily met for nitrogen and sediment but more difficult to meet for phosphorus in 2020.



### Comprehensive Planning

The Permit requires the County to "cooperate with the Maryland National Capital Park and Planning Commission (Commission) during the development and completion of the Water Resources Element (WRE) of the Commission's comprehensive land planning process as required by the Maryland Economic Growth, Resource Protection and Planning Act of 1992 (Article 66B, Annotated Code of Maryland)". The County was an active partner during the development of the WRE Functional Plan, providing data and technical review for the water, wastewater, and stormwater requirements. The County has continued its cooperation with the Commission through the interagency workgroup for the Permit-required evaluation of County codes to assure 'ESD to the MEP' and during the development of local ordinance changes to meet the requirements of the State's Stormwater Management Act of 2007. The County agencies are routine participants for review and comment as Sector Plan and Master Plan documents are being developed.

### III. STANDARD PERMIT CONDITIONS

#### A. Permit Administration

An updated organization chart and contact information is shown in Table III-A1 and enclosed electronically on the CD in Appendix A. These are contacts as of January 2011.

<b>Table III-A1. Organization Chart for Montgomery County Permit-Required Programs</b>				
<b>Part III. Standard Permit Elements</b>	<b>RESPONSIBLE PARTY</b>			
	<i>Department</i>	<i>Name</i>	<i>Title</i>	<i>Telephone</i>
A. Organization Chart	DEP/WMDC	Pam Parker	Senior Planning Specialist	240-777-7758
B. Legal Authority	OCA	Walter Wilson	Associate County Attorney	240-777-6759
C. Source Identification				
1. Storm Drain GIS	DEP/WMD	Dan Harper	Manager	240-777-7709
	DPS	Yung-Tsung Kang	Senior IT Specialist	240-777-6636
2. Urban Best Management Practices GIS	DEP/WMD	Amy Stevens	Manager	240-777-7766
3. Impervious Surfaces GIS	DEP/DO	Vicky Wan	IT Coordinator	240-777-7722
4. Monitoring Locations	DEP/WMD	Keith Van Ness	Senior Water Quality Specialist	240-777-7726
D. Discharge Characterization (as described in Part III H. Assessment of Controls)				
E. Management Programs				
1. Stormwater Management				
a. Stormwater Facility Inspections and	DEP/WMD	Amy Stevens	Manager	240-777-7766
b Stormwater Management Permitting and Plan Review- Implement 2000 Maryland Stormwater Design Manual, and provisions of Maryland's Stormwater Management	DPS	Richard Brush	Manager	240-777-6343
2. Erosion and Sediment Control	DPS	Michael Reahl	Manager	240-777-6344
3. Illicit Connection Detection and Elimination Program	DEP/DEPC	Steve Martin	Field Program Manager	240-777-7746
4. Trash and Litter	DEP/WMD	Ansu John	Outreach Specialist	240-777-7786
	DEP/DSW	Dan Locke	Division Chief	240-777-6402
5. Property Management	DGS	David E. Dise	Director	240-777-9910
6. Road and Roadside Maintenance	DOT	Keith Compton	Highways Services Division Chief	240-777-7607

<b>Table III-A1. Organization Chart for Montgomery County Permit-Required Programs</b>				
<b>Part III. Standard Permit Elements</b>	<b>RESPONSIBLE PARTY</b>			
	<i>Department</i>	<i>Name</i>	<i>Title</i>	<i>Telephone</i>
7. Public Education	DEP/DO	Ansu John	Outreach Specialist	240-777-7786
	DEP/WMD	Meosotis Curtis	Manager	240-777-7711
<b>F. Watershed Assessment</b>				
Countywide Monitoring	DEP/WMD	Keith Van Ness	Senior Water Quality Specialist	240-777-7726
Assessments and Project Implementation	DEP/WMD	Daniel Harper	Manager	240-777-7709
<b>G. Watershed Restoration</b>				
Assessments and Project Implementation	DEP/WMD	Daniel Harper	Manager	240-777-7709
Annual Reporting	DEP/WMD	Pam Parker	Senior Planning Specialist	240-777-7758
<b>H. Assessment of Controls (also see D. Discharge Characterization)</b>				
<b>1. Watershed Restoration Assessment</b>				
Water Chemistry Monitoring	DEP/WMD	Pam Parker	Senior Planning Specialist	240-777-7758
Biological and Physical Habitat Monitoring	DEP/WMD	Keith Van Ness	Senior Water Quality Specialist	240-777-7726
Design Manual Criteria Evaluation	DEP/WMD	Keith Van Ness	Senior Water Quality Specialist	240-777-7726
	DPS	Leo Galanko	Senior Permitting Services Specialist	240-777-6242
<b>2. Stormwater Management Assessment</b>				
Geomorphology/Hydrology	DEP/WND	Keith Van Ness	Senior Water Quality Specialist	240-777-7726
<b>I. Program Funding</b>	DEPC/WMD	Stan Edwards	Division Chief	240-777-7748
	DEP/WMD	Steve Shofar	Division Chief	240-777-7736
	DPS	Stan Wong	Division Chief	240-777-6310
	DOT	Ligia Moss	Senior Engineer	240-777-7514
	DOT	Keith Compton	Division Chief	240-777-7607
	DGS	David Dise	Director	240-777-9910
<b>J. TMDL</b>	DEP/WMD	Meosotis Curtis	Manager	240-777-7711
<b>Part IV. Program Review and Annual Progress Reporting</b>	DEP/WMD	Pam Parker	Senior Planning Specialist	240-777-7758
<b>Part V. Special Programmatic Conditions</b>	DEP/WMD	Meosotis Curtis	Manager	240-777-7711

*DEPARTMENT ADDRESSES:*

*DEP/DEPC:* Department of Environmental Protection/ Division of Environmental Policy and Compliance  
255 Rockville Pike, Ste 120, Rockville MD 20850

*DEP/DO:* Department of Environmental Protection/ Director's Office  
255 Rockville Pike, Ste 120, Rockville MD 20850

*DEP/WMD:* Department of Environmental Protection//Watershed Management Division  
255 Rockville Pike, Ste 120, Rockville MD 20850

*DGS* Department of General Services  
101 Monroe Street, 9<sup>th</sup> Floor, Rockville, MD 20850

*DPS:* Department of Permitting Services/Division of Land Development Services  
255 Rockville Pike, 2nd floor, Rockville MD 20850

*DPWT/DHS:* Department of Public Works and Transportation/Division of Highway Services  
101 Orchard Ridge Dr. 2nd Flr. Gaithersburg MD 20878

*DPWT/DO:* Department of Public Works and Transportation/Division of Operations  
101 Orchard Ridge Dr. 2nd Flr. Gaithersburg MD 20878

*OCA:* Office of the County Attorney  
101 Monroe St. 3<sup>rd</sup> Floor, Rockville, MD 20850

**B. Legal Authority**

The MDE modified the County's permit effective January 26, 2004 to add six small localities as co-permittees for coverage under the Phase II of the NPDES MS4 Permit Program. The County is continuing its oversight, inspection, and enforcement authority over these five municipalities: the Towns of Chevy Chase, Kensington, Poolesville, and Somerset, and Chevy Chase Village; and one special tax district, the Village of Friendship Heights. The contacts for these municipalities are shown in Table III-B1.

<i>Table III-B1. List of Contacts for Municipalities Co-permittees</i>			
<b>Municipality</b>	<b>Contact Name and Title</b>	<b>Address</b>	<b>Telephone</b>
Chevy Chase Village	Shana R. Davis-Cook, Manager	Village Hall 5906 Connecticut Avenue Chevy Chase, MD 20915	301-654-7300
Friendship Heights	Julian Mansfield, Village Manager	4433 South Park Avenue Chevy Chase, MD 20815	301-656-2797
Town of Chevy Chase	Todd Hoffman, Town Manager	4301 Willow Lane Chevy Chase, MD 20815	301-654-7144
Town of Kensington	Sanford Daily, Director of Public Works	3710 Mitchell St. Kensington, MD 20895	301-949-2424
Town of Poolesville	Wade Yost, Town Manager	P.O. Box 158 Poolesville, MD 20827	301-428-8927
Town of Somerset	Jeffrey Slavin, Mayor	4510 Cumberland Avenue Chevy Chase, MD 20815	301-654-1258

For this Permit, the MDE added the Montgomery County Public Schools (MCPS) as a co-permittee. In January 2010, in anticipation of the final issuance of the Permit, the County and MCPS entered into a Memorandum of Understanding (MOU) which defined relative roles and responsibilities concerning Permit requirements. The MOU is included electronically in the CD attached to this report in Appendix B.

Through this MOU, the County agreed to continue facilities inspections and structural maintenance on stormwater management BMPs at MCPS sites and coordinate annual reporting for Permit requirements. The MCPS agreed to provide annual updates on all efforts to reduce runoff impacts from MCPS sites and facilities, coordinate with the County to assure stormwater BMP inspections and maintenance, reduce pesticide and fertilizer applications by using integrated pest management (IPM), report on stormwater pollution plans and associated recordkeeping, provide staff training, student and general public outreach, reduce trash and litter from schoolgrounds and other MCPS facilities, and assure that GIS coverages were developed for existing and future stormwater management systems on school grounds and other facilities.

The County continues to maintain all authority required to meet the requirements of the MS4 permit including those pertaining to its co-permittees.

## **C. Source Identification**

The following information is submitted for all County watersheds in geographic Information Systems (GIS) format with associated tables as required in Part IV of the Permit in Attachment A, Parts A.-L.

### **C1. Storm Drain System**

The Department of Permitting Services (DPS) has digitized storm drain features for approximately 48 public and 105 private storm drain permits since last year. The effort added about 2,182 points (headwall, manhole, inlet, and outfall) and 2.725 lines (channel, culvert, and pipe), respectively, to the existing storm drain inventory. We also added additional drainage areas to the inventory. The inventory is up-to-date or ahead of storm drain point and line features that are either constructed or under construction.

The delivered storm drain inventory (SDI2011.mdb in the SDI2011.zip file) is in the ESRI Personal GeoDatabase format, i.e., Microsoft Access 2000 Database. Each storm drain feature type is a feature class. Each feature class is a table in the database including both spatial and attribute information. This storm drain inventory contains data completed by DPS as of February 15, 2011.

### **C2. Urban Best Management Practices (BMP)**

The County's Urban Best Management Practices database as of February 16, 2011 with associated coverage is included in Attachment A.

### **C.3. Impervious Surfaces**

In July, 2010, the DEP submitted to MDE geodatabases of the impervious layer information up to that point. This information was used during the consultant effort to develop the watershed-specific implementation plans and will be used to track progress on the watershed restoration requirement of our permit. This represents the most up to date information currently available.

The three files transferred via FTP included:

- MDE.zip (contains the GIS coverages)
- MS4\_Impervious 2009 for MDE.xls
- MDE MS4 IMPERVIOUS METADATA.doc

### **C.4. Monitoring Locations And C.5. Watershed Restoration**

The GIS coverage and associated attribute information for Hollywood Branch stream restoration project, the Breewood Tributary comprehensive restoration project, and the Olney Oaks stormwater retrofit are included on CD in Attachment A.

#### **D. Discharge Characterization**

The Permit requires that Montgomery County must use discharge characterization monitoring gathered since early 1990s and additional monitoring data required under the Permit to assess the following: “the effectiveness of stormwater management programs, County watershed restoration projects, and to document progress towards meeting waste load allocations (WLAs) indicated in the Total Maximum Daily Loads (TMDLs) approved by the U.S. Environmental Protection Agency (EPA) for watersheds or stream segments located in the County. Details about this monitoring can be found in Part III. H.”

#### **E. Management Programs**

##### **E.1 Stormwater Management**

###### **a. SW Maintenance and Inspections**

The County continues to inspect BMP facilities to assess repair and maintenance needs and documents the number of maintenance inspections, enforcement actions, and maintenance inspection schedules. The County has improved tracking with the updated asset management program, Infor.

###### **b. Stormwater Management Plan Review and Permitting**

###### **Stormwater Management Act of 2007**

The Permit requires the County to implement the stormwater management design policies, principles, methods, and practices found in the *2000 Maryland Stormwater Design Manual* and provisions of Maryland’s *Stormwater Management Act of 2007*. The Permit requires the County to modify County SWM ordinances, regulations and new development plan approval processes within one year after State adoption of regulations. These regulations were adopted on April 24, 2009, with an effective date of May 4, 2009.

Subsequently, significant concerns were raised by the development community on the effective start date of these regulations. The State adopted emergency regulations during 2010 to clarify grandfathering, waivers, and redevelopment issues. These changes provided a rationale for using a local waiver process instead of making changes to the State’s grandfathering provisions. There already existed provisions in the proposed draft Montgomery County legislation for redevelopment which allowed a preference progression from ESD to structural practices to offsite solutions to waivers. However, the discussions and uncertainties at the State level further delayed the review and adoption of the County's changes. As of February 2011, proposed changes to the County's stormwater management ordinances are undergoing final review.

## Review of County Codes

The Permit also requires the County to review local codes and ordinances to identify impediments to and opportunities for promoting ESD to the MEP within one year, and to remove those impediments within 2 years of the Permit's issuance. The County must also report the modifications made or needed to be made.

County consultants prepared a final report, [Implementing Environmental Site Design in Montgomery County](#), which summarizes how the County's codes, regulations, programs, and policies may need to be updated to allow the use of Environmental Site Design (ESD) and low impact development techniques to the maximum extent practicable (MEP). The draft report was reviewed by the public and by representatives from the Department of Environmental Protection, Department of Permitting Services, Department of General Services, Department of Transportation, Department of Fire and Rescue Services, Maryland-National Capital Park and Planning Commission, and Montgomery County Public Schools. In 2011, DEP will begin coordination with the appropriate County agencies to begin to draft legislation changes. This effort will be coordinated with the MNCPPC Zoning Code Rewrite that is currently underway.

The Report can be found at:

[http://www.montgomerycountymd.gov/content/dep/downloads/Implementing\\_ESD\\_Report\\_FINAL\\_110910.pdf](http://www.montgomerycountymd.gov/content/dep/downloads/Implementing_ESD_Report_FINAL_110910.pdf) and electronically on the CD as Appendix C attached to this report.

The application of ESD to the MEP will be determined during the development approval process (DAP). Recommended changes from the review of the DAP are to:

- Require applicants to attend a formal pre-application meeting.
- Require ESD practice locations as a base layer on all site plans reviewed during the DAP.
- Develop and adopt standard checklists and narrative requirements for ESD to the MEP.

As Code chapters were reviewed, specific sections that may be viewed as barriers, gaps, or opportunities were identified. Limited barriers to select or multiple ESD practices were identified in several Code chapters. The review is summarized in Table III E-1.



Table III-E1 Summary of General Findings	
Significant Barriers, Gaps, or Opportunities	Fewer but Important Barriers, Gaps, or Opportunities
<ul style="list-style-type: none"> <li>• Ch 59. Zoning</li> <li>• Development Approval Process</li> </ul>	<ul style="list-style-type: none"> <li>• Ch 22. Fire Safety Code</li> <li>• Ch 26. Housing and Building Maintenance Standards</li> <li>• Ch 49. Streets and Roads</li> <li>• Ch 50. Subdivision of Land</li> <li>• Commercial-Residential ZTA</li> </ul>
Limited Barriers, Gaps, or Opportunities	No Barriers or Gaps
<ul style="list-style-type: none"> <li>• Ch 8. Buildings</li> <li>• Ch 22A. Forest Conservation - Trees</li> <li>• Ch 40. Real Property</li> <li>• Ch 41. Recreation and Recreation Facilities</li> <li>• Ch 58. Weeds</li> <li>• Trees, Approved Technical Manual (MNCPPC)</li> </ul>	<ul style="list-style-type: none"> <li>• Chapter 14. Development Districts</li> <li>• Chapter 18A. Environmental Sustainability</li> <li>• Chapter 21. Fire and Rescue Services</li> <li>• Chapter 24B. Homeowners' Associations</li> <li>• Chapter 27A. Individual Water Supply and Sewage Disposal Facilities</li> <li>• Chapter 36. Pond Safety</li> <li>• Chapter 44. Schools and Camps</li> <li>• Chapter 45. Sewers, Sewage Disposal and Drainage</li> <li>• Chapter 54A. Transit Facilities</li> <li>• Chapter 56. Urban Renewal and Community Development</li> <li>• Guidelines for Environmental Management of Development in Montgomery County (Maryland National Capital Park and Planning Commission)</li> </ul>

Significant findings and recommendations include:

- Change existing terms found in the Code to be consistent with ESD practice terms.
- Consider offering incentives of increased building height or density if a higher level of ESD is implemented.
- Include vegetated ESD practices as green area.
- Consider green roofs as green area on high density sites.
- Develop acceptable standards for permeable pavement and reinforced turf to replace existing streets, roads, sidewalks, parking, and other impervious surfaces.
- Implement ESD practices within street and road rights-of-way when possible to capture runoff from impervious surfaces.
- Consider ESD practices as methods for natural resource and environmental protection.
- Show ESD practices on landscape, site concept, and development plans.
- Reference ESD related definitions and requirements in Chapter 19 (Erosion, Sediment Control and Storm Water Management) as necessary throughout the Code.

A Zoning Text Amendment (ZTA) adopted during 2010 established Commercial-Residential zones with the goal of enabling walkable, mixed-use communities that incorporate green design and convenient services. Comments include:

- The ZTA presents an opportunity to allow ESD within surface parking landscape area.
- A gap is created by the use of the term “stormwater management recharge facility” instead of ESD.

c. Stormwater Program Review

The permit requires the County to maintain programmatic and implementation info according to requirements established as part of MDE’s triennial SW program review. During 2010, the MDE commended the Montgomery County Department of Permitting Services (DPS) for its erosion and sediment control program following its bi-annual review and program evaluation. Every two years the MDE conducts a field inspection of active construction sites in Montgomery County for compliance with erosion and sediment control requirements.

“A review of active construction sites in Montgomery County found erosion and sediment controls in good condition,” said MDE Water Management Administration director Jay G. Sakai. “Additionally, documentation of problems and routine enforcement by the County inspection staff was found to be very effective in gaining compliance with the approved erosion and sediment control plans. The County’s inspection staff should be commended for their hard work and dedication.”

The state’s report found that more than 17,000 inspections were performed during fiscal years 2008 and 2009 and 770 violation notices were issued. Additionally, 65 stop work orders were issued and 245 fines were levied resulting in more than \$80,000 in fines collected.

E.2 Erosion and Sediment Control

The Permit also requires the County to implement improvements in any MDE evaluation of the County’s application for the delegation of erosion and sediment control enforcement authority. The Department of Permitting Services reported no recommended improvements as a result of MDE evaluation.

At least three times per year, the County Department of Permitting Services, Land Development Division, Sediment and Storm Water Section conducts “responsible Personnel Certification” courses. Appendix A, Part J includes data on “Responsible Personnel Certification” conducted by the County.

Appendix A, Part. K contains data on Quarterly Grading Permit Information for earth disturbances in the County of one acre or more.

### E.3 Illicit Discharge Detection and Elimination (IDDE)

The 2010 MS4 permit requires the County to implement an inspection and enforcement program to ensure that all discharges to and from the municipal separate storm sewer system that are not composed entirely of storm water are either permitted by MDE or eliminated. The permit requires field screening of at least 150 outfalls annually, with further water chemistry sampling of dry weather discharges found, according to parameters specified in Appendix A, Part I, Illicit Discharge Detection and Elimination.

During the second Permit cycle, the DEP targeted outfalls in watersheds identified by the Montgomery County's Countywide Stream Protection Strategy as "impaired" for further investigation to meet the Permit requirements for IDDE. In assessing the screening results, the DEP found that targeting stream reaches identified as impaired by factors other than physical habitat has not resulted in identifying what 'other' factor might be causing that impairment.

Beginning with the screenings for 2009-2010, the DEP wanted to focus on areas within the County where there are documented or potential illegal connections which 'routinely' produce water quality problems. These areas would be small enough or contain a simple enough drainage network that water quality investigations could methodically proceed with a 'good' probability of locating the sources of continuing problems. The DEP would then implement dye studies, targeted outreach, or other measures to assure that these sources are eliminated or at least significantly reduced.

In developing a grant proposal for Chesapeake Bay Small Watershed Grants Program, the Center for Watershed Protection (CWP) approached DEP as a potential partner in a pilot project to facilitate and enhance IDDE investigations in the County. The DEP was interested in the CWP's approach to IDDE investigations, as documented in their Illicit Discharge Detection and Elimination Manual, developed to support and guide MS4 communities. CWP was eventually awarded a grant from the U.S. Fish and Wildlife Service in September 2010. The CWP and DEP partnered with watershed groups, such as the Friends of Sligo Creek, the Audubon Naturalist Society, and the Anacostia Watershed Society and other agencies including the WSSC, M-NCPPC, and DC DEP to conduct outfall screenings in December 2010. An IDDE kickoff meeting was hosted by CWP and DEP on 12/16/10 for the above mentioned stakeholder groups, followed by the field screening in January 2011. The field screening teams investigated over 150 outfalls covering most of the Sligo Creek watershed. the DEP feels that the focused approach outlined in the CWP's IDDE Manual produced better results than previous investigations, and intends to incorporate many of the CWP protocols in the future. Results of the pilot program will be included in the next MS4 Permit report due February, 2012.

Water Quality Investigations during 1/1/10 – 6/30/10 2010.

For the last half of fiscal year 2010 (January-June 2010), the DEP Division of Environmental Policy and Compliance (DEPC) investigated 59 water quality complaints

and 13 hazardous materials incidents, which resulted in the issuance of 10 formal Enforcement Actions (4 Civil Citations with fines totaling \$2,000 and 6 Notices of Violation (NOVs)) and numerous Warning Letters. The formal Enforcement Actions are summarized in the following table:

Table III-E2 Water Quality Investigations Jan. 1-Jun 30, 2010

No.	Case Number	Date Issued	Citation/NOV	Violation	Defendant	Defendant's Address
1	23461	6/22/2010	\$500	Grease Discharge	Tardie Boyd Biodiesel	1651 38th St. SE, Washington, DC
2	23318	5/11/2010	\$500	Sediment Discharge	Superior Underground Construction	13333 Clarksville Pike, Highland, MD
3	23278	5/14/2010	\$500	Vehicle Fluids Discharge	I & J Services LLC	11501 Georgia Ave., Wheaton, MD
4	23278	5/14/2010	\$500	Vehicle Fluids Discharge	I & J Services LLC	11501 Georgia Ave., Wheaton, MD
5	22793	1/13/2010	NOV	Grease Discharge	Irene's Papusas Restaurant	2408 University Blvd. W., Wheaton, MD
6	22902	1/28/2010	NOV	Waste Water Discharge	Herb Gordon Mercedes Benz	3161 Automobile Blvd., Silver Spring, MD
7	23171	4/9/2010	NOV	Fuel Oil Discharge	Dr. Arnel Peralta	15100 Whitegate Rd., Silver Spring, MD
8	23282	4/29/2010	NOV	Vehicle Fluids Discharge	Vic Kushawaha	11313 Classical Lane, Silver Spring, MD
9	23366	5/24/2010	NOV	Sediment Discharge	Keys Plumbing & Heating	8723 Maple Ave., Bowie, MD
10	23446	6/10/2010	NOV	Vehicle Fluids Discharge	Marleni Benitez	12622 Grace Max Street, Rockville, MD

### Illegal Dumping

The DEP continues to support its Illegal Dumping Hotline 240-777-3867 ("DUMP"). During the last half-of fiscal year 2010, there were 244 complaints of illegal dumping, which resulted in the issuance of 24 formal Enforcement Actions (5 Civil Citations with fines totaling \$2,500 and 19 Notices of Violation (NOVs)) and numerous Warning Letters. The vast majority of complaints concerned bags of trash, vegetation (leaves and brush), or other unwanted materials either dumped or being stored on private or public property. Only a small percentage of these cases represented a potential for direct runoff of contaminated material into a storm drain or receiving system. Complaint resolution invariably involved removal and proper disposal of trash and debris and proper storage (i.e. under cover) of other materials.

### E.4 Trash and Litter

Montgomery County continues to support regional strategies to reduce trash and increase recycling, including participating in the annual Potomac Watershed trash Summits sponsored by the Alice Ferguson Foundation's Trash Free Potomac Watershed Initiative.

As part of a comprehensive response to the County's MS4 Permit requirements to control trash, DEP has inventoried all the litter-related programs in the County including both litter removal and litter source reduction. The DEP is developing a trash reduction strategy to meet the Potomac Trash Free treaty goals and the MS4 waste load allocations

for the proposed Anacostia Trash TMDL. This has included evaluating annual budgets and opportunities to leverage greater efficiencies between programs such as code enforcement inspectors whose duties address similar litter-related issues. This baseline has provided opportunities to assess where further investments in litter removal can be cost-effective. Practices to reduce trash and litter were included for the Potomac tributaries during the development of the watershed-specific implementation plans to meet Permit requirements and the countywide strategy.

### Recycling and Solid Waste Management

Currently the County has regulations in place that mandate recycling in the County and impose fines for improper and illegal disposal of Solid Waste. These regulations are:

- Montgomery County Code Chapter 48: Solid Waste
- Montgomery County Executive Regulation ER15-04AM: Residential and Commercial Recycling
- Montgomery County Executive Regulation 18-04: Collection, Transport and Disposition of Solid Waste

In FY09, Montgomery County's overall recycling rate was 44.2 percent. The County has a goal to recycle 50 percent of all waste generated in the County.

The Department of Environmental Protection's Division of Solid Waste Services (DSWS) currently continues to conduct extensive outreach, education, training and enforcement programs to increase awareness of waste reduction and recycling. During FY10, staff and DSWS Recycling Program Volunteers participated in 373 outreach and education events, providing 34,521 people with assistance and information on waste reduction, recycling, buying recycled, composting, grasscycling and other topics.

The County continues to utilize a corps of dedicated volunteers in the Recycling Volunteer Program to provide assistance to educate others on the benefits of and the need to recycle. Together, the volunteers contributed 1,432 hours of direct service with an estimated value of \$35,806.

### Enforcement

DSWS continues efforts to investigate and enforce compliance with Montgomery County's solid waste and recycling regulations as it pertains to generators and collectors. The Department of Housing and Code Enforcement investigates and enforces violations of litter codes on private property.

DEP's Code Enforcement staff members also investigate violations of environmental codes prohibiting illegal dumping. In FY2010, 419 cases of illegal dumping were investigated by our staff. Code violations related to water quality including dumping of trash and debris in our waterways are tracked and mapped into a GIS system. DEP analyzes this information to help target areas for follow-up investigations of illicit discharges to the stormwater system, and illegal dumping. These areas are also targeted

as we develop strategies to implement the County's MS4 Stormwater permit which includes Trash control requirements and a requirement to meet a TMDL for Trash in the Anacostia River.

In addition to the Code violation incidents being mapped, DEP's stream monitoring team is developing a map which will show trash ratings at stream stations monitored during the last five year round of countywide monitoring. These ratings will also be used in setting priorities for follow up activities for trash reduction.

#### Storm Drain Inlet Practices

DEP continues to revise and test storm drain inlet configurations, which aim to capture trash, organic debris and sediment at the curbside without impacting flow capacity within the storm drain system. The most recent inlet designs are scheduled to be installed along Lockwood Drive and Stewart Lane (White Oak, MD) in the fall of 2010. Once installed, inlet cleaning schedules and other aspects of facility performance will be evaluated.

#### E.5 Property Management

The permit requires that a Notice of Intent (NOI) be to MDE submitted, and a pollution plan developed, for each County owned and municipal facility requiring NPDES stormwater general permit coverage. The status of pollution prevention plan development and implementation for each County owned and municipal facility must be submitted annually.

Table III-E3 lists the County facilities covered under the State General Discharge Permit for Storm Water Associated with Industrial Activities (the General Permit). The State accepted Notice of Intents (NOI's) for these facilities in March 2003 for coverage until November 30, 2007. The State has not yet reissued current NOI's to the facilities.

The Department of General Services (DGS) – Facilities Management Division has the overall responsibility for all of the properties. Specifically, DGS is responsible for Facility Management Certification and overall responsibility of the SWP3. Operating agencies at these facilities include: Department of Transportation (Division of Highway Services), the Department of Transportation (Division of Transit Services), and DGS/Fleet Management, and the Department of Environmental Protection (Division of Solid Waste). Each of these agencies is responsible for implementing portions of the SWP3 that relate to their operations. DEP (Division of Solid Waste) now has a Compliance Officer who ensures environmental compliance at Solid Waste Operations facilities; DGS (Division of Fleet Management) has a Program Manager responsible for environmental compliance for Fleet operations; and DOT (Division of Highways) has a Program Manager responsible for environmental compliance for Highway operations at Depots.

In 2010, all the County agencies, DOT, DGS, and DEP continued to deliver yearly training on the NPDES requirements and implementation to all employees involved in operation at the facilities. Training is specific to each operation, is based on yearly assessments, and is delivered at each facility location. Training was delivered during 2010 and over 200 staff attended. Assessments, needs and improvements are covered in this training as well as ways to reduce hazardous substances, pollutants, or contaminants.

In 2008, a new Capital Improvement Program (CIP) funding was initiated that dedicates funds for environmental compliance, specifically the development and implementation of P2 Plans at each of the County maintenance facilities. The goal of this program is to focus on a facility at a time by developing P2 Plans for each facility, and then follow up with the design and construction of mitigating measures at each facility. These P2 Plans will also highlight SWP3 responsibilities per agency so that each agency can dedicate funding to maintain and operate in such manner to prevent the potential of product runoff.

As such, the County hired a Consultant to develop and update the 2000 Pollution Prevention Plans (SWP3). In 2010, updated Pollution Prevention Plans, Stormwater Pollution Prevention Plans, and Spill Prevention, Control and Countermeasures Plans were developed for the Colesville Highway Maintenance Facility and the Kensington Small Transit Facility. The DEP (DSWS) annually update the Stormwater Pollution Prevention Plans for all of the Solid Waste facilities. The most current Pollution Prevention Plans and site inspections can be found electronically in the CD submitted with this report as Appendix G.

The lack of indoor vehicle wash facilities at several of the sites prevents the complete elimination of wash water to the storm drain system. The Bethesda/Seven Locks Highway Maintenance facility and the Silver Spring/Brookeville Highway Maintenance facility have been rebuilt, each with an indoor truck wash. There is a covered truck wash at the Gaithersburg depot. There is covered truck and bus steam cleaning and an indoor bus wash at the Gaithersburg/Equipment Maintenance Operations Center facility. There is also an indoor bus wash at the Silver Spring/Brookeville facility. The bus washes, however, are old and no longer recycle the washwater, and need to be replaced. There are four remaining facilities without indoor vehicle wash facilities and each facility continues to manage outdoor vehicle washing in order to eliminate the potential for contamination and the direct runoff of wash water to the storm drain system.

Table III-E3 Status of County Facilities Covered under the State General Discharge Permit for Storm Water Associated with Industrial Activities

Name Of Facility/ Responsible Agency	Watershed/Acreage	Most Recent Pollution Prevention Inspection and/or Plan (Electronic File included on CD enclosed)
Colesville Highway Maintenance Depot (DOT)	Anacostia/Paint Branch; 12 acres	Pollution Prevention Plan, Stormwater Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan updated 2010.
Damascus Highway Maintenance Depot ( DOT)	Potomac/Great Seneca: 1.4 acres	
Gaithersburg Highway Maintenance Facility (DOT)	Potomac/Rock Creek; 26 Acres	
Gaithersburg Equipment Maintenance Center (DGS)		2010 Inspection
Gaithersburg Transit Services (DGS)		2010 Inspection, electronic file enclosed
Shady Grove Processing Facility (DEP)	Potomac/Rock Creek; 43 out of 52.5 acres	
Poolesville Highway Maintenance Facility (DOT)	Potomac/Dry Seneca Creek 4 Acres	
Seven Lochs Service Center (DGS)	Potomac/Cabin John Creek: 19 Acres	2010 Inspection, electronic file enclosed
Seven Lochs Highway Maintenance Facility (DOT)		
Kensington Small Transit Service Maintenance Facility	Potomac/Rock Creek	Pollution Prevention Plan, Stormwater Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan updated 2010.
Brookeville Highway Maintenance Facility (DOT)	Potomac/Rock Creek: 18 Acres	
Brookeville Transit Center/ Fleet Maintenance Center (DGS)		2010 Inspection, electronic file enclosed
Colesville Highway Maintenance Depot (DOT)	Anacostia-Paint Branch; 12 acres	
Gude Landfill (DEP)	Potomac-Rock Creek; 120 acres	2010 Inspection, electronic file enclosed
Oaks Landfill (DEP)	Patuxent-Hawlings River and Potomac-Rock Creek;190 out of 545 total	2010 Inspection, electronic file enclosed



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Montgomery County Public Schools (MCPS)

In this first year MCPS was included as co-permittee on a MS4 permit, MCPS worked with the other county agencies to improve project communication and coordination. MCPS also maintained, repaired, and upgraded storm water facilities, conducted training for staff, prepared and implemented storm water pollution prevention plans at industrial sites, and incorporated environmental site design into construction projects. The Permit requires permittees to submit a fiscal analysis of its expenditures and to maintain adequate program funding to comply with all conditions of this permit. In MCPS, program funding originates in both the capital and operating budgets. Below are details on these permit-related activities:

Structural and Nonstructural Maintenance

MCPS Division of Maintenance upgraded and repaired existing underground and above ground storm water facilities in the year 2010, in preparation for transferring maintenance responsibility to the Montgomery County Department of Environmental Protection (DEP) in accordance with a Memorandum of Understanding signed by both parties in 2007. Several facilities remain to be transferred; this work is expected to be completed during 2011.

MCPS also performed nonstructural maintenance on aboveground stormwater facilities, and maintained several underground facilities not eligible for transfer to the county.

**Amount Spent Calendar 2010:** \$229,830 (See Table III-E6 for details)

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Training

MCPS is responsible for training employees in positions that have particular potential for storm water pollution; primarily to include maintenance and transportation staff. In fall 2009, MCPS conducted awareness level training on illegal dumping for School Plant Operations staff during their regularly scheduled annual training. During 2010, MCPS began performing more in depth in-house storm water and pollution prevention training for staff in the Fleet Maintenance Division.

To date, 12 staff members, mainly auto technicians, have received such training, with the remainder to be completed in 2011. In the coming years, our goal is to train MCPS maintenance staff, as well as begin a program of re-training on a regular basis.

MCPS currently contracts much of the work for the upkeep of above ground storm water facilities. In the year 2010, MCPS began the process of training and certifying our maintenance staff under the County Storm Water Facilities Contractors Training. Our goal is to perform more of this required maintenance in-house.

**Amount Spent Calendar 2010:** \$500

Efforts to reduce runoff impacts from MCPS facilities and operations

**Industrial Facilities:** MCPS runs and operates five industrial sites that are categorized under MDE General Discharge Storm Water Permit SW-02. During the year 2010, MCPS drafted Storm water Pollution Prevention Plans (SWP3) and new Spill Prevention, Control and Countermeasure (SPCC) Plans for all these industrial facilities. Four of these sites have completed plans: Shady Grove Depot, Randolph Depot, Clarksburg Depot and Bethesda Depot. The SWP3 and SPCC for the West Farm Depot, the most modern facility, is currently under review and will be completed in 2011. Two depots, Shady Grove, Randolph, have begun the process of implementing these plans.

**Amount Spent Calendar 2010:** \$337,879 (See Table III-E6 for details)

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**New Construction and Modernization Projects:** MCPS currently has 37 projects that are in design or under construction that incorporate environmental site design (ESD) as part of the approved storm water management plans. Each plan utilizes ESDs to the maximum extent practicable, as required by new storm water management regulations, through the use of vegetative roofs, bio-retention and bio filtering facilities, micro structures, porous pavements and other innovative devices.

**Integrated Pest Management (IPM):** MCPS continues to implement its existing IPM program at all schools, centers and facilities, with an emphasis on physical rather than chemical measures for pest control, in accordance with MCPS Regulation ECF-RB, Pesticides Use in Schools. Under Maryland Law, only licensed and registered pest control workers may apply any sort of pesticides or herbicides in a school building or on school grounds (COMAR 15.05.02.10) In addition, only certain products are approved for use in and around MCPS facilities and all chemicals used undergo a thorough safety review by professional staff. State law also enumerates very specific requirements about the storage, use, signage and notification required for pesticide applications. MCPS IPM staff work with facility occupants to stress the need for proper sanitation measures and structural exclusion to control pests, using pesticides only when all other measures have failed.

MCPS has also recently added a process to pre-qualify contractors that may be used to perform athletic field maintenance at high school athletic fields in order to have more centralized controls in place over fertilizer and herbicide applications, if necessary.

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#### **Coordination with other County Agencies**

In this first year MCPS was included as co-permittee on a MS4 permit, MCPS worked with the county environmental agencies and to improve project communication and coordination. MCPS participated in a county task force on Low Impact Development and

participated in the county's annual Storm water Facility Maintenance Contractor Training. Staff also worked closely with county Storm Water Facilities Maintenance Program staff. Finally, MCPS signed a new Memorandum of Understanding with the with Montgomery County Maryland outlining the various responsibilities of both agencies under the new MS4 permit. MCPS cooperates with the County in promoting the Rainscapes for Schools program, managed by the county. MCPS provides annual reports to county agencies on trash collection, mandatory, and non-mandatory recycling activities.

In addition, MCPS has been working very closely with the Washington Suburban Sanitary Commission (WSSC) on their Fats, Oils, and Grease (FOG) program to help reduce and eliminate sanitary sewer overflows that could potentially originate from MCPS sites and negatively impact stream water quality. As part of this process, MCPS is reviewing grease interceptor cleanout schedules, providing training, and implementing best management practices in all school cafeterias.

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**Responsible MCPS staff for coordination on NPDES MS4 permit issues:**

Lynne Zarate, Assistant Director, Division of Maintenance. MCPS also has one staff position responsible for implementing these various storm water programs, Agustin Diaz, Environmental Specialist.

**Table III-E4: MCPS STRUCTURAL AND NON-STRUCTURAL MAINTENANCE ACTIVITIES IN 2010**

<i><b>Storm water Management Program</b></i>	<i><b>School</b></i>	<i><b>Cost \$</b></i>
<b><i>Watershed Management-Underground Facility</i></b>		<b><i>\$137,219</i></b>
<i>SEP</i>	Meadowhall ES	\$2,821
<i>1ogSEP</i>	Rosa Parks MS	\$2,821
<i>BAYS</i>	Forest Oak MS	\$3,200
<i>UG STORM PIPE (Jetting)</i>	Highland ES	\$2,325
<i>Stormwater inlet Filter</i>	Shady Grove Depot	\$5,637
<i>UG;BayF;INFU;BAYS (repairs)</i>	Fields Road ES	\$10,900
<i>SFU;UG;STFIL;FS</i>	Gaithersburg ES	\$9,875
<i>UG;SFU;FS (repairs)</i>	Lakewood ES	\$11,050
<i>SEPSF (repairs)</i>	North Chevy Chase ES	\$5,300
<i>4INFU;4SEP</i>	Northwest HS	\$22,568
<i>2SEP;UGSF (repairs)</i>	Rosemont ES	\$9,042
<i>1UG;2SFU;2FSU (repairs)</i>	William Tyler Page ES	\$18,705
<i>UG;2STFIL;FS</i>	College Gardens ES	\$20,775
<i>2BAYSavers</i>	Randolph Bus Depot	\$6,400
<i>1UGSTFIL (repairs)</i>	Richard Mont HS	\$2,900
<i>1Oil Separator (Maint)</i>	Shady Grove Depot	\$2,900
<b><i>Stormwater Ponds-Above Ground Facility</i></b>		<b><i>\$92,611</i></b>
<i>SED TRAP RESTORE</i>	Shady Grove Depot	\$15,329
<i>STWPOND (Maint)</i>	Blake Robert HS	\$2,757
<i>2STWPOND (Maint) (Repair)</i>	Benjamin Banneker MS	\$4,743
<i>WET STWPOND (Maint)</i>	Sherwood HS	\$1,823
<i>BIORETENT POND (Maint)</i>	Washington Grove ES	\$864
<i>SED TRAP addtnl cost</i>	Shady Grove Depot	\$4,200
<i>4SANFILT (MAINT) (Repair)</i>	Rocky Hill MS	\$3,826
<i>1SANFILT (Repair) addtnl cost</i>	Rocky Hill MS	\$3,623
<i>1SF;2STWPOND RESTORE</i>	Damascus HS	\$24,801
<i>STWPOND (Maint)</i>	Gaithersburg HS	\$2,247
<i>STWPOND MAINT</i>	Fields Road ES	\$4,746
<i>BioRETENT POND RESTORE</i>	Robert Frost MS	\$3,498
<i>STWPOND (Maint)</i>	Randolph Depot	\$7,529
<i>STWPOND (Maint) addtnl cost</i>	Gaithersburg HS	\$911
<i>SED TRAP addtnl cost</i>	Shady Grove Depot	\$3,563
<i>BioRETENT POND RESTORE</i>	Lakeland Park MS	\$8,141

**TABLE III-E5: INDUSTRIAL FACILITY COMPLIANCE ACTIVITIES TO REDUCE RUNOFF IMPACTS FROM MCPS FACILITIES AND OPERATIONS**

<b><i>UST and Fuel facilities</i></b>		<b>\$337,879</b>
<i>FUEL UST Maint</i>	Randolph Depot	\$2,271
<i>SWP3;SPCC;P2</i>	Shady Grove Depot	\$24,665
<i>UST Maint</i>	Shady Grove Depot	\$3,155
<i>FUEL UST Maint</i>	Bethesda Depot	\$3,825
<i>Fuel Line Replacement</i>	Bethesda Depot	\$35,486
<i>Fuel Station Canopy</i>	Randolph Depot	\$82,966
<i>SWP3;SPCC</i>	Randolph Depot	\$17,830
<i>Fuel Station Canopy Drains</i>	Randolph Depot	\$12,494
<i>Septic pipe Insp &amp; Jetting</i>	Clarksburg Depot	\$8,500
<i>Fuel station Canopy</i>	Clarksburg Depot	\$113,298
<i>SWP3;SPCC</i>	Clarksburg Depot	\$17,830
<i>SWP3;SPCC</i>	Bethesda Depot	\$17,830
<b><i>Training</i></b>		<b>\$363</b>
<i>Storm water Pollution Prevention video</i>	Fleet Maintenance Depots	\$164
<i>SP2 Training Course</i>	Maintenance Depots	\$199
	<b>TOTAL EXPENSES</b>	<b>\$570,342</b>

E.6 Road Maintenance:

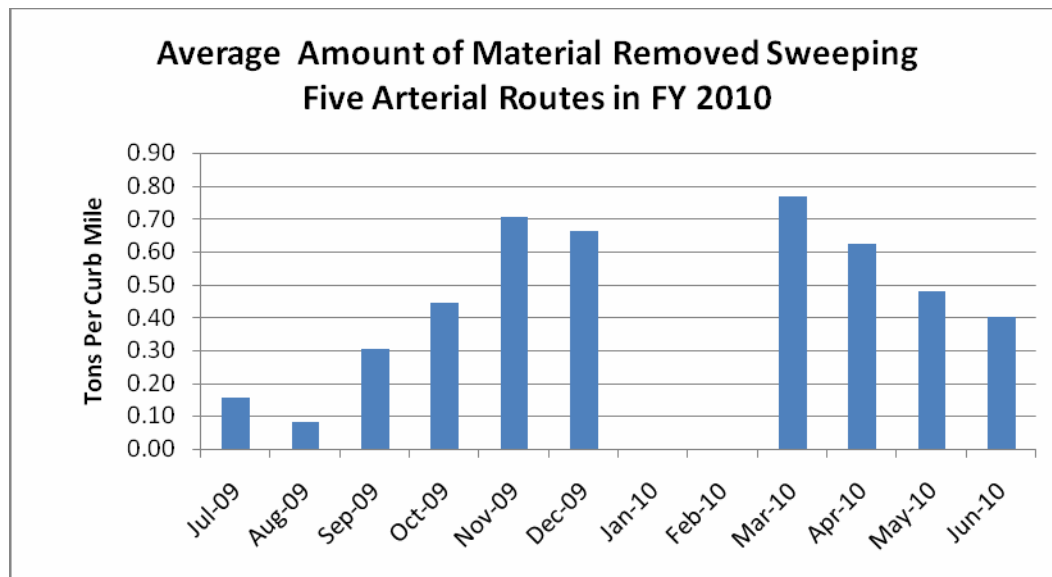


Figure III-E1 Average Amount of Material Removed Sweeping Five Arterial Routes in FY2010

The County streetsweeping program continued in FY 2010. Because of the lower amounts of material collected per dollar spent sweeping residential roads, effort continue to be focused on arterial routes although DEP still sweeps priority residential routes at least once each year. The 1246 miles of priority residential routes tend to produce more material than the other county residential routes. The priority residential routes were swept between March and June of 2010 producing 777 tons of material (0.62 tons per curb mile). They will be swept again in FY 2011. The other residential routes were also swept in FY 2010 and may be swept in FY 2011, but funding for that effort depends on the County Department of Transportation.

The monthly sweeping of arterial routes also continued, although sweeping was interrupted by a hiatus during January and February due to budget cuts resulting from the slow economy. The ten cycles of arterial sweeping done in FY2010 did pick up 1039.80 tons of material. As in past years, the winter and early spring periods were more productive (Figure). The months of November through April produced a total of 614 tons of material versus 425 total tons of material produced in the months of July through October, May and June.

Table III-E6 Tons of Material Collected by Street Sweeping FY2010

<b>Tons of Material Collected by Street Sweeping FY 2010</b>	
425.30	July Through October, May and June
614.50	November Through April
1039.80	Total

#### IPM

The County's roadside weed spraying program will now be conducted by Montgomery Weed Control Inc. Montgomery Weed Control Inc. is a cooperative weed control program between Montgomery County Department of Economic Development, Agricultural Services Division and the Maryland Department of Agriculture, Plant Protection and Weed Management Section.

The program function is to assist farmers, landowners, businesses and government agencies in the control of noxious and invasive weeds and enable them to comply with the Maryland Noxious Weed Law. The purpose of the program is to assist in the control and eradication of noxious weeds in Montgomery County. The program is equipped and weed control personnel are trained to provide a spray service for control of noxious weeds on a fee basis. The program utilizes specialized spray equipment. Cost efficient control is achieved with minimal use of herbicides. Best Management Practices (BMPs) are always followed. All personnel employed by MCWC are pesticide applicators registered under Maryland Law and are trained in compliance with the State Pesticide Applicator's Law. All quantities of pesticides employed by Montgomery Weed Control

will be reported annually as required by the Permit. A copy of the scope of work can be found electronically on the CD attached to this report.

#### Application of sand and salt

The DOT reported a total of 169,633 tons of sand and salt applied to County roadways during FY2010. This amount is unusually high and was influenced by severe weather conditions that affected the region in the winter of 2010.

#### E.7 Public Education and Outreach:

##### Compliance Hotline

The DEP continues to support its Illegal Dumping Hotline 240-777-3867 (“DUMP”). During the first half-year 2010, there were 244 complaints of illegal dumping, which resulted in the issuance of 24 formal Enforcement Actions (5 Civil Citations with fines totaling \$2,500 and 19 Notices of Violation (NOVs)) and numerous Warning Letters. The vast majority of complaints concerned bags of trash, vegetation (leaves and brush), or other unwanted materials either dumped or being stored on private or public property. Only a small percentage of these cases represented a potential for direct runoff of contaminated material into a storm drain or receiving system. Complaint resolution invariably involved removal and proper disposal of trash and debris and proper storage (i.e. under cover) of other materials.

The County has also implemented a call center that allows citizens to call one number (311) for all concerns in the County, including illicit discharges and spills. For more information, please see the County’s 311 home page at:  
<http://www3.montgomerycountymd.gov/311/Home.aspx>

##### Watershed Outreach

The position dedicated to watershed outreach was abolished in 2006 and remained vacant until a watershed outreach planner position was created and filled in December 2009. This position was dedicated to implementing outreach programs associated with the third round of the MS-4 permit as well as provide outreach support to the Watershed Management Division (WMD) programs such as the RainScapes Program, Stream Resource monitoring, Stormwater Maintenance and Capital improvement projects

Due to this new hire, the DEP made further steps in meeting its MS4 permit by getting involved in 20 outreach events including events focused around minorities such as the Asian American Community Resource Fair. Through these events, DEP staff was able to directly educate over 1,400 residents and influence many more by their presence.

Outreach support was continually provided for water quality enforcement issues, to the stakeholders on the Water Quality Advisory Group, and for regional efforts under the Anacostia Watershed Restoration Agreement and the Patuxent Reservoirs Watershed

Protection Agreement. The WMD continued to conduct CIP project outreach, including public meetings, field walks, and telephone and e-mail responses. In addition, the WMD-Biological Monitoring staff provided technical assistance to a variety of community and environmental groups for workshops on volunteer biological monitoring.

This position also provided support in the development of the trash and littering outreach to meet Permit requirements.

#### Public Outreach and Stewardship

The Permit requires the County to develop a public outreach and stewardship workplan. The County recognizes and is committed to the increasingly important role that public outreach and stewardship will play if improved water quality conditions are going to be achieved. A significantly enhanced outreach program is proposed through the Countywide Coordinated Implementation Strategy (Strategy) submitted with this report. The new model includes greater participation from minority and faith-based groups, business consortiums, schools, neighborhood associations, and civic groups. It also requires revisiting current initiatives carried out by the various County agencies to look for better and more efficient ways to communicate messages, cross-train, and create synergies that result in greater engagement, greater awareness, and sustained changes in behavior.

Appendix E of the Strategy contains “practice sheets” which highlight targeted restoration activities for the County to develop and refine. A total of eight practices have been identified that can be adopted countywide or in more targeted watershed areas where there are specific water quality issues to address. Many of the practices build upon existing County programs but require a much broader reach to new partner groups. Program start up costs are suggested and were used to for cost estimates associated with Countywide strategy. The highlighted practices include:

- Pet Waste Pickup Education and Outreach Campaign
- Lawn Stewardship Education and Outreach Campaign
- Anti-Littering Education and Outreach Campaign
- Innovative Stormwater Management Awareness Campaign
- Stream Stewards Education and Outreach Campaign
- Riparian Reforestation Education and Outreach Campaign
- Roof Runoff Reduction Education and Outreach Campaign
- Parking Lot Recharge Value Education and Outreach Campaign



## **F. Watershed Assessment**

The County is continuing its systematic assessment of water quality, stream resource conditions, and habitat modification within all of its watersheds. During 2004, the County began the watershed inventory in the Great Seneca and Muddy branch watersheds as cooperative efforts with the USACE and the City of Gaithersburg. These areas represent roughly one-third of the total County land area and include drainage from the densely developed areas of Gaithersburg and Germantown. This study is continuing and will be completed in 2011. In 2008, the County in partnership with the USACE, Prince Georges County and the District of Columbia began a reassessment of the Anacostia River watershed. That study was completed in February 2010.

### **Assessments 2007-2010 (Completion Dates)**

Great Seneca Creek and Muddy Branch Watershed Assessment and Restoration  
(Ongoing)

#### **Anacostia River Restoration Plan (February 2010)**

In 2007, the County in partnership with the United States Army Corps of Engineers - Baltimore District, Washington Council of Governments (MWCOG), Prince George's Counties, the District of Columbia, the Maryland-National Capitol Park and Planning Commission (M-NCPPC), Maryland Department of the Environment (MDE), and Maryland Department of Natural Resources (DNR) initiated the Anacostia River Watershed Restoration Plan (ARP). The scope of the ARP was to identify and prioritize restoration opportunities for developing a 10 year restoration plan for the Anacostia River watershed. The draft final report *Anacostia River Watershed Restoration Plan and Report* was completed in February 2010.

The inventory of projects and possible enhancements identified through the ARP provided the basis for the County's watershed implementation plan to meet Permit wasteload allocations, trash reduction requirements, and contribute toward the countywide impervious area restoration goal.

#### **Low Impact Design Inventory of Publicly Owned Facilities Phase I (2008)**

The Low Impact Design Inventory of Publicly Owned Facilities Phase I inventoried, assessed, and prioritized LID opportunities at three priority sites and 22 County owned facilities located in the Anacostia River and Rock Creek watersheds. The site inventory and assessment evaluated onsite and offsite drainage patterns influencing the facility's runoff and its downstream impacts. Based on the assessment, an inventory of projects was developed listing all potential opportunities to capture, reuse, treat or infiltrate stormwater runoff from the site. Concept plans (30%) were developed for three priority County owned facilities.

#### **Low Impact Design Inventory of Publicly Owned Facilities Phase II (2009)**

Low Impact Design Inventory of Publicly Owned Facilities Phase II inventoried, assessed, and prioritized LID opportunities at 31 County owned facilities, five public

school sites, and three County roadways. The site inventory and assessment evaluated onsite and offsite drainage patterns influencing the facility's runoff and its downstream impacts. Based on the assessment, an inventory of projects was developed listing all potential opportunities to capture, reuse, treat or infiltrate stormwater runoff from the site. Concept plans (30%) were developed for two public schools and 3 roadways.

Inventory of LID Retrofit Opportunities & Stormdrain Systems at Montgomery County Public Schools and Facilities Phase I (Initiated December 2009 & Ongoing)

Inventory of LID Retrofit Opportunities & Stormdrain Systems at Montgomery County Public Schools and Facilities Phase I inventoried, assessed and prioritized LID opportunities for 70 county schools and other Montgomery County Public School (MCPS) facilities. Based on the assessment, an inventory of projects was developed listing all potential opportunities to capture, reuse, treat or infiltrate stormwater runoff from the site. A stormdrain inventory was also performed during the site assessment for each facility. When available, the stormdrain data collected will integrate into the County's existing stormdrain GIS database.

**G.Watershed Restoration:**

Hollywood Branch Stream Restoration Project

The Hollywood Branch Stream Restoration Project will mitigate stream degradation caused by past suburban development made without adequate stormwater controls. Hollywood Branch is located in the suburbs of eastern Montgomery County, Maryland, and is a second order tributary to Paint Branch (a tributary of the Anacostia River). An example of a severely impacted stream reach on Hollywood Branch is provided below. A watershed map encompassing the 2.25-mile stream reach (377 acres) evaluated under this project is also provided below.

This project includes a completed assessment of stream stability along Hollywood Branch and identified sites where past stream impacts require mitigation. Stream restoration approaches will be designed and implemented as appropriate for areas with significant stream impacts. Stream restoration goals include: stabilizing erosive areas, improving floodplain access, enhancing riparian conditions, enhancing stream conditions and improving overall aquatic resources.

These goals will be achieved with the following steps:

- 1) Conduct a preliminary assessment of stream conditions and identify problems that require corrective action (Completed January, 2009)
- 2) Draft stream restoration concepts (Completed June 2009)
- 3) Coordinate public outreach and involvement (Public meeting held December 2009 and project outreach ongoing)
- 4) Design stream restoration project and submit permit applications (Spring 2011)
- 5) Finalize stream project permits and begin construction (Scheduled, Winter 2011)

#### **H.Assessment of Controls:**

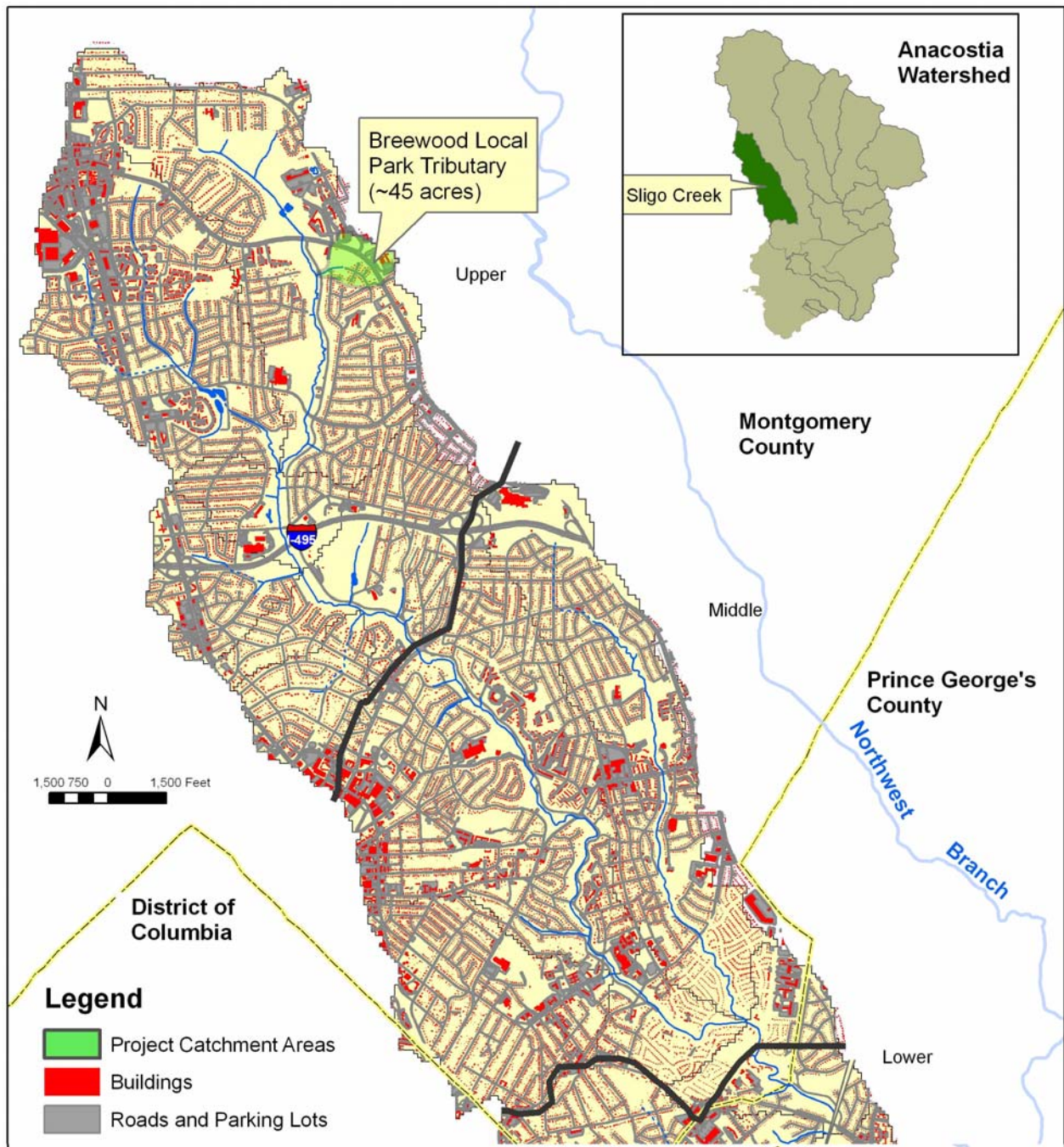
In order to help determine the effectiveness of the NPDES stormwater management program and to document progress towards improving water quality, the Permit requires the County to assess effectiveness of its control measures. Assessing implemented control measures is accomplished by pre and post restoration monitoring of a watershed, including chemical, physical and biological monitoring. The County must document progress towards meeting the watershed restoration goals identified in Part III.G. and any applicable Waste Load Allocations (WLAs) developed under the EPA approved TMDLs.

In 2009, during the re-issuance of the County's MS4 permit, the County determined that the previously monitored Stewart April Lane Tributary would no longer be a suitable site to demonstrate the effectiveness of stormwater controls required by the Permit. The County then identified the Breewood Tributary, a 45-acre catchment within the Piedmont physiographic, for the implementation of an innovative comprehensive management approach which will link upland watershed source control measures with stream and wetland restoration, low impact design techniques (LID), and vegetated control practices to address major sources of water quality impacts.

The tributary location within the Sligo Creek and Anacostia River is shown in Figure III-H1. The County proposed a plan to monitoring the effectiveness of restoration efforts during pre and post restoration monitoring of the Breewood Tributary and received approval from MDE. A summary of projects proposed for the Breewood Tributary can be [found on DEP's website](http://www.montgomerycountymd.gov/content/dep/downloads/BreewoodFactSheet.pdf) at: <http://www.montgomerycountymd.gov/content/dep/downloads/BreewoodFactSheet.pdf> and is attached in the electronic submission to this report in Appendix D.

The electronic version of the detailed study plan for Breewood Tributary can be found in Appendix E. The first year of water chemistry loadings analyses will be completed for the next Permit cycle.

Figure III-H1 Sligo Creek Watershed Project Area Map (modified from MWCOG, 2008)



### H.1 Watershed Restoration Assessment

#### Breewood Tributary

A biological monitoring station was established in the Breewood Tributary. The station is upstream of Sligo Creek Parkway, with the 75 meter station's centerpoint located opposite the end of Tenbrook Drive (Figure III-H2). The location was selected to be downstream of the many restoration improvements planned for the Breewood Tributary watershed, yet above Sligo Creek Parkway. This is to avoid any confounding affects from the Parkway, an adjoining paved vehicle parking lot, playground and their yearly maintenance. The station will be monitored in the spring of each year for benthic macroinvertebrates and late summer/early fall for streamside salamanders. Two additional stations downstream of the Breewood Tributary will also be monitored every year as well.

Rather than just report an Index of Biotic Integrity (IBI) value, changes in the biological community's structure and function metrics will be presented. These changes would be compiled and summarized for the IBI score, but the changes necessary to change an IBI score from one narrative category to another may be significant enough that they may not occur during the 5 year NPDES permit period. Reporting the changes to the community structure and function will track the small, cumulative changes that will occur within the biological community as water quality and habitat improves.

Two 20 bankfull width physical geomorphic stations are also established in the Breewood Tributary (Figure III.H.2). The first physical geomorphic station is by SCBT101. The second station is in the channel below the intersection of Arcola Avenue and University Boulevard. Changes in longitudinal profile, cross section, and bed composition will be reported. Photos will also be used to visually document changes in the cross sections and profiles as well.





Figure III-H2 Locations of Biological and Physical Stream Monitoring Stations,  
Breewood Tributary of Sligo Creek.

## H.2.Stormwater Management Assessment

The permit requires that the County shall continue monitoring in the Clarksburg Special Protection Area for determining the effectiveness of stormwater management practices for stream channel protection.

The thirteenth annual report on the Special Protection Area (SPA) [http://www.montgomerycountymd.gov/content/dep/downloads/2009\\_SPA\\_Annual\\_Report\\_DISTRIBUTE\\_WEB.pdf](http://www.montgomerycountymd.gov/content/dep/downloads/2009_SPA_Annual_Report_DISTRIBUTE_WEB.pdf) program summarizes the results of all monitoring completed in the four SPAs through 2009, including the Clarksburg Special Protection Area. Monitoring of stream conditions is intended to evaluate water quality and development impacts on water quality. BMP monitoring is intended to evaluate the effectiveness of BMPs in mitigating construction impacts as well as their effectiveness in minimizing post-construction effects on water quality. This report includes the results of stream and best management practice (BMP) monitoring and presents a comprehensive analysis of all available biological, chemical, and physical data collected from 1994 through the 2009 calendar year. The report is included in the electronic submission to this report as Appendix F.

The Special Protection Area (SPA) program was initiated in 1994 by County law. According to the Montgomery County Code, Section 19-61(h), a Special Protection Area is defined as:

“a geographic area where:

- (1) existing water resources, or other environmental features directly relating to those water resources are of high quality or unusually sensitive; and
- (2) proposed land uses would threaten the quality or preservation of those resources or features in the absence of special water quality protection measures which are closely coordinated with appropriate land use controls.”

SPA monitoring provides information to help evaluate: (1) the effectiveness of the SPA program in minimizing development-related impacts to sensitive streams; and, (2) the efficiency, performance, and effectiveness of best management practices (BMPs) in reducing pollutants. The 2009 Annual Report covers the 2009 monitoring year.

During 2009, stream conditions changed little in the SPAs from those reported for 2008. Out of 48 stations monitored, 46 stations (96%) had no change in stream conditions from 2008. In 2008 and 2009, there was a decreased amount of development reflecting the economic downturn which may have allowed less active construction sites to stabilize and for completed developments to convert to SWM. Many developments in Clarksburg have been completed and former sediment and erosion control devices have been fully converted to stormwater management BMPs. This rate of conversion was faster than in previous years.

Identifying development related impacts to SPA streams includes two types of monitoring. Cumulative impacts are assessed via biological monitoring<sup>1</sup> while development related water chemistry and pollutants are quantified through BMP monitoring<sup>2</sup>.

Preliminary results indicate that BMPs are performing well; in some cases they are performing better than expected. However, results from biological monitoring indicate varying degrees of degradation in the streams. Performance of the BMPs does not directly reflect the health of the organisms living in the receiving streams.

### ***Biological Monitoring***

#### *Clarksburg SPA*

In Clarksburg, stream conditions were in the *good* to *excellent* range from 1995 to 2002. Construction began in the Clarksburg SPA area in 2002; the same year in which a record drought also occurred. Stream conditions were significantly degraded between 2002 and 2007, with some slight improvement in 2008. In 2009, using the stream resource condition index, the streams in Clarksburg stayed much as they did in 2008 with the exception of the stream draining a portion of the Newcut Road development. This station improved from fair to good in 2009, based on combined scores for fish and macroinvertebrates.

However, much of the development in Clarksburg occurs within the drainage areas of small headwater streams. Benthic macroinvertebrates alone tend to provide a better indication of water quality and stream health in these small streams over fish.

The stream conditions in headwater areas undergoing development activities have been compared to a control set of headwater streams that have remained undeveloped. Stream conditions between the control and test stations were initially very similar, but diverged in 2003. In 2009, all of the test stations (under construction) in the Little Seneca Creek watershed remained in *fair* condition for benthic macroinvertebrates.

Stream conditions in the Ten Mile Creek subwatershed remain unchanged from 2008. An adult brown trout—indicators of good water quality—was again found in Ten Mile

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<sup>1</sup> The types and degree of cumulative impacts to local streams is determined through the monitoring of biological indicators, specifically the range and condition of benthic macroinvertebrates (bottom-dwelling aquatic insects, worms, crustaceans, and mollusks) and fish that are living in the stream. The compositions of these biological communities are ideal indicators of the health of a stream system, but do not necessarily reflect pollutant loads and cannot be typically used to identify specific water chemistry problems.

<sup>2</sup> BMP monitoring in the SPAs includes flow-weighted sampling for the reduction of pollutant loads including sediment, nutrients, and heavy metals. BMPs are defined as techniques that are effective in eliminating or reducing the amount of pollution or other detrimental impacts to a watershed or wetland (Montgomery County Code 19-61(a)). Ongoing monitoring of sediment and erosion control (S&EC) BMPs continues to provide data during construction on total suspended solids (TSS) removal. Results from post-construction monitoring of stormwater management (SWM) BMPs are also presented in this report.



Creek. It is not known whether the trout are naturally occurring, but no signs of fish stocking, such as fin erosion, were observed. *Fair* stream conditions remained in the headwaters, where most development has occurred in recent years.

### ***BMP Monitoring***

Within the SPAs, BMP monitoring has demonstrated that the redundant features (i.e., the sequential use of structures in a treatment train) in S&EC and SWM designs are effective in reducing stormwater runoff and decreasing pollutant loadings, and appear to be more effective than the use of individual structures. Results also show that placement of individual structures within the treatment train is an important consideration. Since the inception of the SPA program, the Department of Permitting Services has consistently refined BMP design plans and reduced the size of the area draining to individual structures in an effort to improve pollutant removal efficiency and mitigate development impacts.

Much of the Clarksburg SPA still remains in the “during construction” monitoring phase but many properties have largely been stabilized, with S&EC basins converted to SWM facilities.

### ***Recommendations and Conclusions***

During 2011, the DEP will move forward to propose changes in Chapter 19 Article IV to provide DEP with direct management of BMP monitoring. This would provide more consistency and reduce some of the problems encountered to date with monitoring in the SPAs. These code changes will be implemented as soon as possible. At the same time, the Maryland Department of the Environment will be completing review and revision of the State's S&EC regulations. Changes under consideration include requirements for faster conversion from S&EC to SWM, stricter phasing stages of construction to allow greater focus on soil stabilization, limiting the acreage allowed of exposed soils, stricter utility S&EC, and limiting of cut and fill activities to retain natural drainage patterns. The DPS is representing Montgomery County on the statewide workgroup. Montgomery County has traditionally been the leader in progressive S&EC regulations and expects to exceed requirements of the new MDE regulations to implement ESD to the MEP.

The County intends to partner with developers, consultants, and the environmental community on the future of the SPA program to redefine goals and objectives and the best way to accomplish those goals. The DEP is the lead agency on this effort and will be setting up a series of meeting in 2011 to discuss the future of the SPA program.

Issues related to maintenance of BMPs also need greater consideration. DEP is reviewing and evaluating the frequency needed to maintain BMPs properly. Special consideration will need to be given to some of the non structural ESD techniques required by the 2007 Maryland Stormwater Management Act.

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## **Clarksburg SPA Stream Monitoring and Hydrologic Analysis**

Beginning in 2007, information on a comprehensive ecological monitoring and assessment approach has been presented that links changes in land use, stream hydrology, stream morphology, and habitat to changes in biological stream conditions. This monitoring is being done through a partnership of Government agencies and universities that have concentrated their resources on the Clarksburg Master Plan SPA. More details can be found in the Chapter 4. of the Technical Appendix- Stream Characteristics. [http://www.montgomerycountymd.gov/content/dep/downloads/Section4\\_TechnicalAppendix2009\\_format.pdf](http://www.montgomerycountymd.gov/content/dep/downloads/Section4_TechnicalAppendix2009_format.pdf)

Clarksburg was selected by the partnership because:

- of the ability to evaluate the effects of development on an undeveloped landscape;
- the level of development activity is greatest;
- the suite of representative BMPs to monitor is the most diverse;
- long term monitoring resources enable the most intensive and effective monitoring to evaluate changes in hydrology and morphology.

Results from this effort will be used to evaluate which BMP types are the most and least effective and to evaluate if engineered solutions alone can minimize the impacts of development to stream systems.

As described in Section 1.2.2 of the 2009 Special Protection Area Report, a Before, After, Control, Impact design, or *paired catchment (watershed) design* (Farahmand et al. 2007), is used in the Clarksburg Study Area. Additional maps are provided in the [Chapter 4. Stream Characteristics Technical Appendix](#). The following subsections present information on hydrology and geomorphology conditions in 2009.

### ***Hydrology***

#### **Background**

Conversion of watersheds to urban areas has been shown to have major affects on stream hydrology as a result of vegetation removal, stream channel modification, and increases in impervious area. These alterations can lead to increased stream flashiness and hydrologic responses: faster onset and decay of storm flow hydrographs, reduction in base flow rates, and higher and earlier peak discharges (Bledsoe 2001; Paul and Meyer 2001; CWP 2003; Goonetilleka et al. 2005; Konrad and Booth 2005; Walsh et al. 2005; Farahmand et al. 2007). The effects of these hydrologic changes are most severe in headwater streams (Nehrke and Roesner 2001). This section builds on the work reported in the 2007 and 2008 SPA Annual Reports.

#### **Hydrologic Data Analysis and Interpretation**

The rain gages at Black Hill Regional Park and Little Bennett Regional Park have produced records of rainfall totals that allow the calculation of a number of useful statistics including storm durations, storm mean intensity, and storm peak intensity.

Stream flow gages continue to provide data that allows the calculation of instantaneous peak discharge and daily mean discharge. Information on the five gages is presented in Table III-H1

**Table III-H1 Descriptions of the Five Stream Gages in the Clarksburg Study Area.**

Gage Id. Number	Name	Date Started	DA (mi <sup>2</sup> )	DA (acres)
01644371	Little Seneca Creek Tributary Near Clarksburg, MD	5/2004	0.43	275.2
01643395	Sopers Branch at Hyattstown, MD	2/2004	1.17	748.8
01644375	Little Seneca Creek Tributary Near Germantown, MD	6/2004	1.35	864
01644372	Little Seneca Creek Tributary at Brink, MD	6/2004	0.37	236.8
01644380	Cabin Branch Near Boyds, MD	6/2004	0.79	505.6

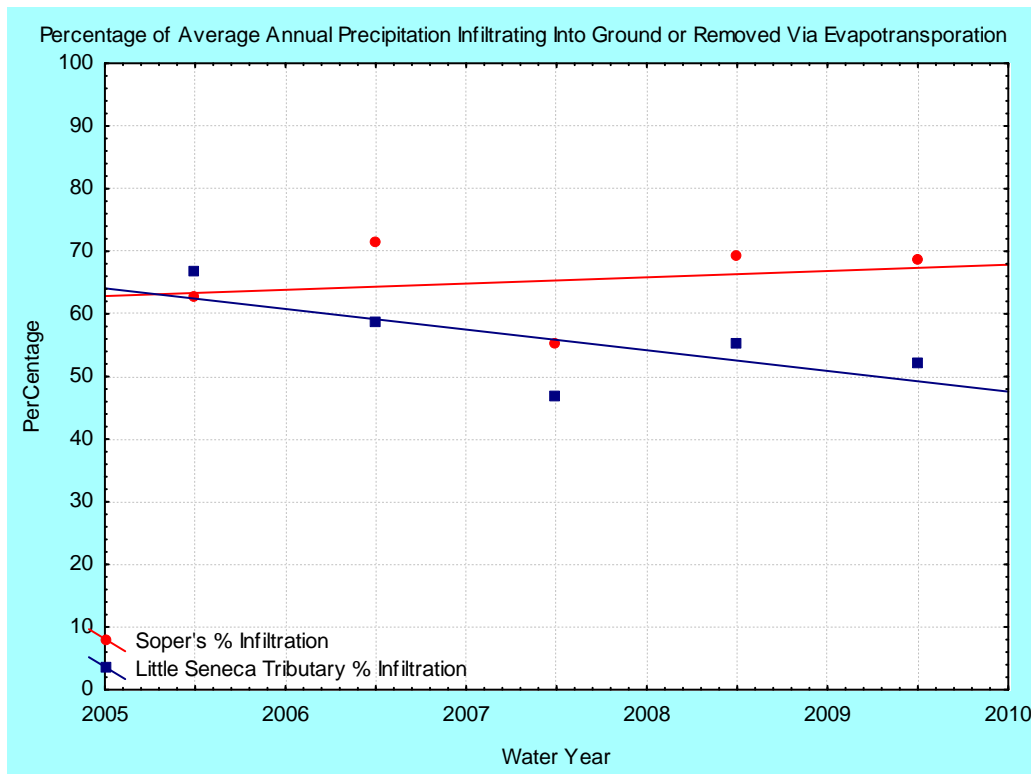
### **Precipitation, Infiltration, and Annual Flows**

Average annual precipitation is about 42 inches in the Baltimore-Washington area (NWS 2008). Average monthly precipitation varies throughout the year and spring and summer thunderstorms can cause significant variations in precipitation depending on location (Doheny et al. 2006; James 1986).

Annual runoff for the two USGS gages (01644371, 01643395) was used to determine how much average annual precipitation infiltrates into the groundwater or is released into the atmosphere through evapotranspiration within the drainage areas of the gages. Data were obtained from the online [Water Year Reports](#) published by the USGS, Baltimore Office (Doheny 2009, personal communication) for water years 2005, 2006, 2007, 2008 and 2009. A copy of the 2009 USGS Water Data Report for the two aforementioned stream gages is located in the Technical Appendix.

The Sopers Branch had about 68.5% of the average annual precipitation either infiltrating into the ground or lost to evapotranspiration during water year 2009 (Fig. III-H3). The tributary of Little Seneca Creek had about 52.1% of the average annual precipitation either infiltrating into the ground or lost to evapotranspiration during water year 2009.

On average, the overall amount of precipitation infiltrating into the ground or lost via evapotranspiration has steadily declined in the Newcut Road Neighborhood Tributary (Fig.III-H3; blue line) as development continues while remaining fairly constant in the Sopers Branch (Fig.III-H3; red line).



**Figure III-H3 Percentage of Average Annual Precipitation Infiltrating into the Ground or Removed via Evapotranspiration.**

The overall amount of precipitation that directly entered the Newcut Road Neighborhood Tributary to Little Seneca Creek increased over this same time period (Fig.III-H4), blue line). Annual flows were adjusted for the differing drainage areas of the two gages to normalize the annual runoff amounts and to allow for comparison.

**About twice as much rainfall is running directly into the Newcut Road Neighborhood Tributary stream as compared to the control stream, Sopers Branch, for the 2005, 2006, 2007, 2008, and 2009 water years. This is due to the changes in imperviousness that have occurred in the drainage area as a result of development.**

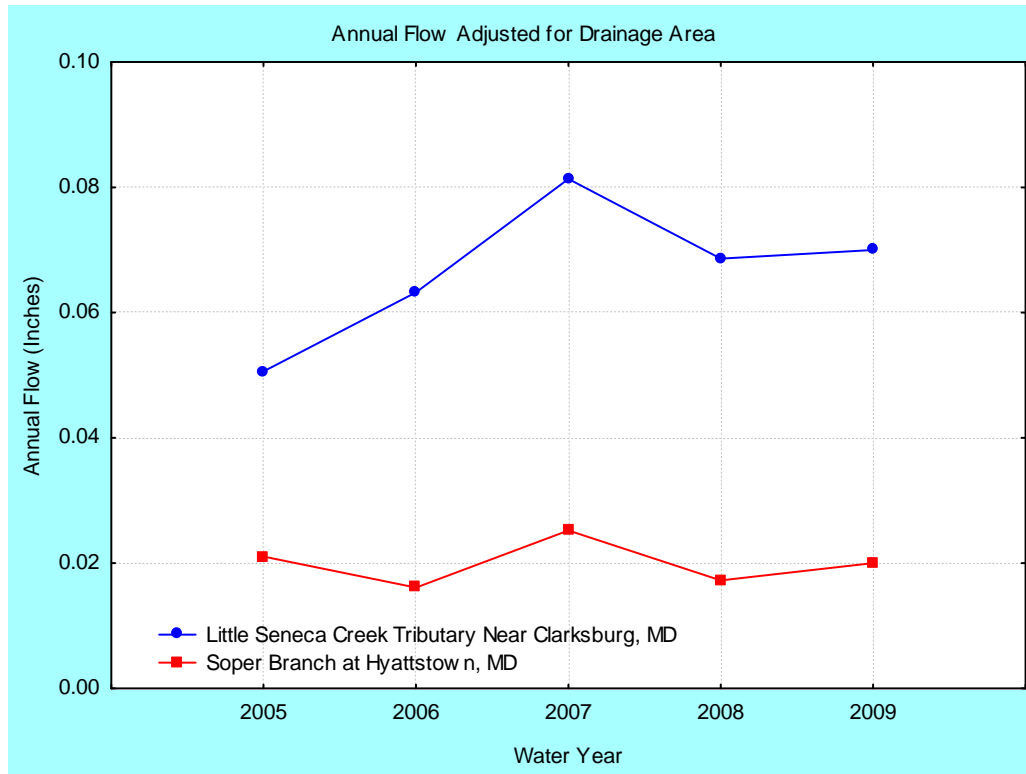


Figure III-H4 Annual Flow (Adjusted for Drainage Area) from 2005 through 2009.

### Stream Flashiness

Stream flashiness refers to the stream flow response to storms. Conversion of watersheds to urban areas can lead to flashier hydrologic responses (Farahmand et al. 2007) with water levels that rise, peak, and fall very rapidly in response to storm precipitation (Doheny et al. 2006). An index was used in the 2007 SPA Annual Report to compare the flashiness of the Sopers Branch and Newcut Road Neighborhood Tributary streams (Doheny et al. 2006). The index is described as the ratio between the instantaneous peak discharge (highest stream flow [IPD]) to the daily mean discharge (average stream flow [DMD]) that occurs during a storm event. When the discharge is divided by the size of the drainage area (acres), the ratios are normalized and the ratios from different streams can be compared. Daily mean discharge and instantaneous peak discharges for storm events from 2004 through 2009 are provided in the Technical Appendix.

During the construction period, the Newcut Road drainage was, on average, flashier than the Sopers Branch drainage. In 2009, the Newcut Road Neighborhood Tributary Flashiness Index was higher when storms had higher *average* storm intensities or higher *maximum* storm intensities (Technical Appendix). Storms measured in 2009 that resulted in similar Flashiness Indices between the Sopers Branch and Newcut Road Neighborhood Tributary had less than one inch of rain, low average storm intensities, and low maximum storm intensities. The Newcut Road Neighborhood Tributary had quicker peak runoff events with storms with greater than one inch of rain in a 24 hour period (Fig.III-H5).

Stream bed and bank erosion would be higher during these events. A table of daily mean discharge and instantaneous peak discharges for storm events is provided in the Technical Appendix.

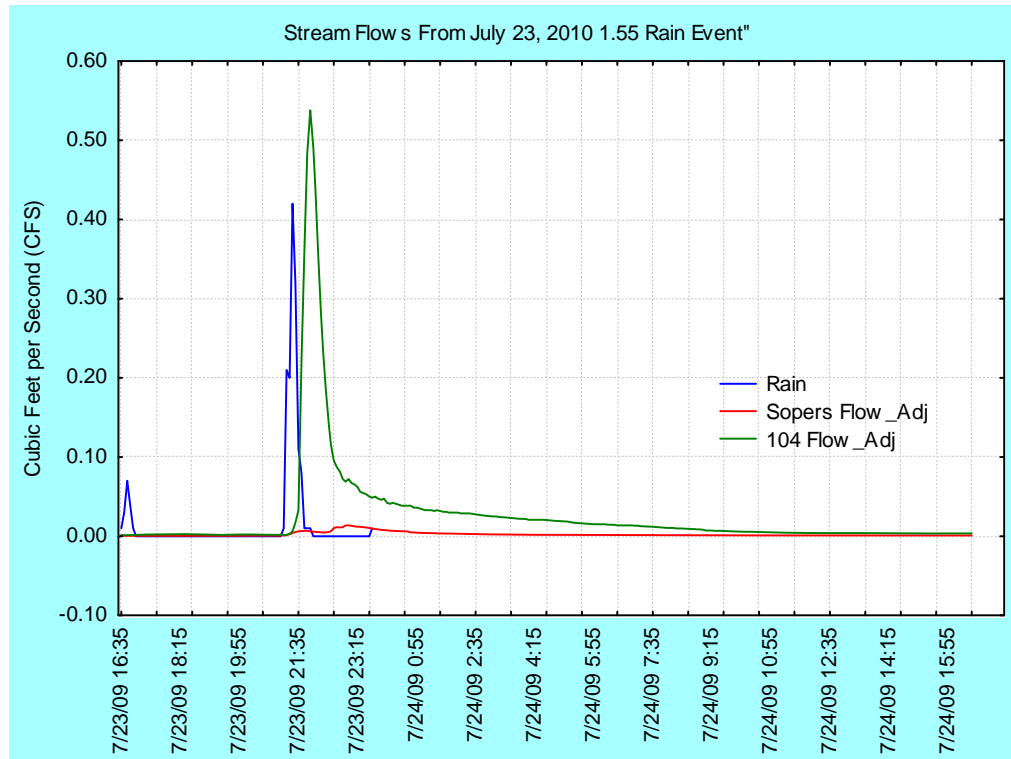


Figure III-H5 Comparison of Stream Response: July 23, 2009 1.55" storm.

### Time of Concentration

Time of concentration is defined as the difference in time between the start of rainfall and when discharge begins to increase at the gaging station (Doheny et al. 2006). Changes in the time of concentration of a watershed can be useful in understanding stream response to increases in imperviousness. When the conversion process to SWM BMPs has been completed, time of concentration will be evaluated to determine if the Newcut Road tributary's response to rainfall has changed compared to the control station.

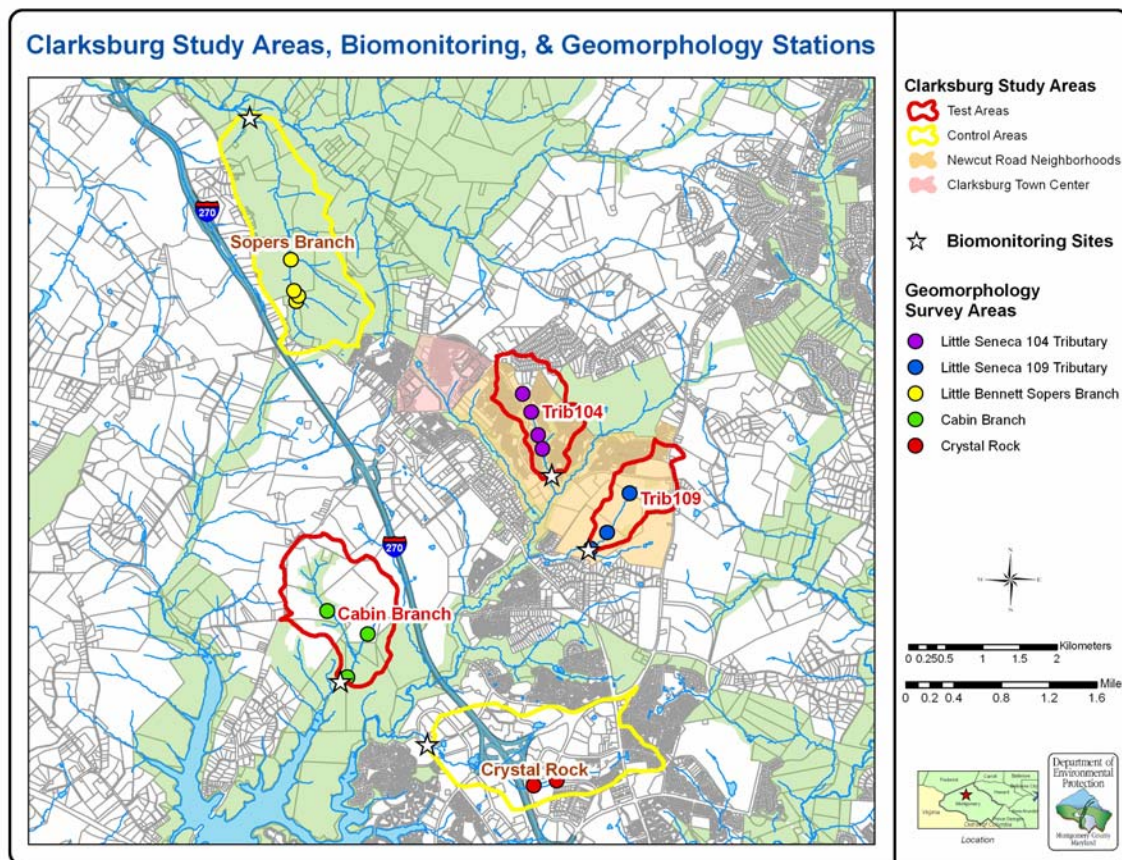
### Changes in Stream Geomorphology

Changes in the storm runoff amounts, directly and immediately reaching the stream, and the flashiness of the stream's response to storms can cause changes in stream geomorphology.



### Study Design and Data Collection

Geomorphic surveys are conducted in the three test areas (Fig.III-H6): two in the Newcut Road Neighborhood (Little Seneca 104 tributary) (Fig.III-H7.a), and one in the Cabin Branch Neighborhood as well as in the undeveloped control area in Little Bennett Regional Park (Soper's Branch) (Fig.III-H7.b) and the developed control in the Germantown area (Crystal Rock) (Fig. III-H7.c). Multiple surveys were completed in all areas to document the temporal change in stream channel morphology. Survey information includes longitudinal profiles, cross sections, bed composition (pebble counts), and sinuosity.

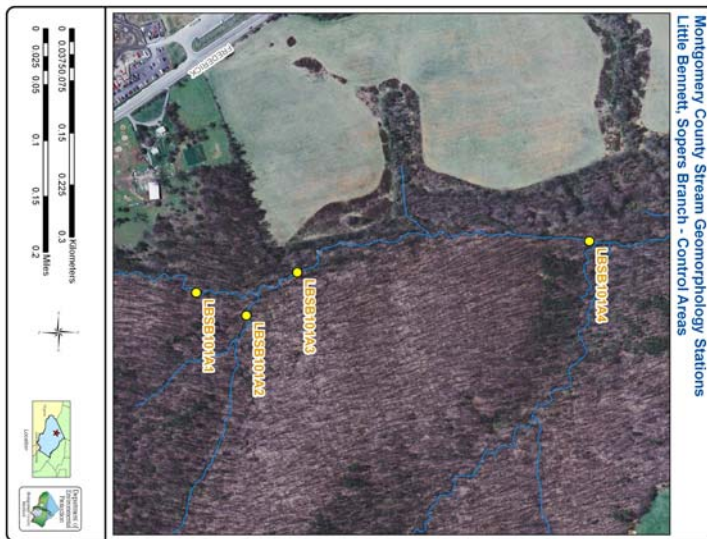


**Fig.III-H6** Location of the Clarksburg Monitoring Partnership BACI three test areas and two control areas. Also included are biological monitoring stations and geomorphic survey locations.

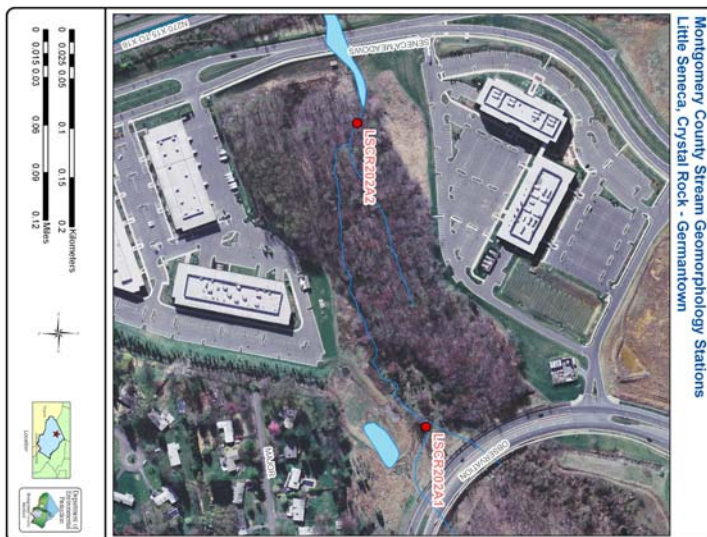
Surveys are located within similar habitat sections of the study streams. The first habitat section is a steeply-graded, straight channel (low sinuosity index) consisting mostly of riffle habitat. As sections were surveyed further downstream (areas two, three, and four), the slope of the stream slightly decreases, sinuosity increases, and runs and pools become more prevalent.



A



B



C

**Figure III-H7 Little Seneca 104 tributary (Newcut Road neighborhood) geomorphology survey test areas (A), Little Bennett Creek survey control areas (B), and Germantown negative control survey areas (C).**



## **Data Analysis and interpretation**

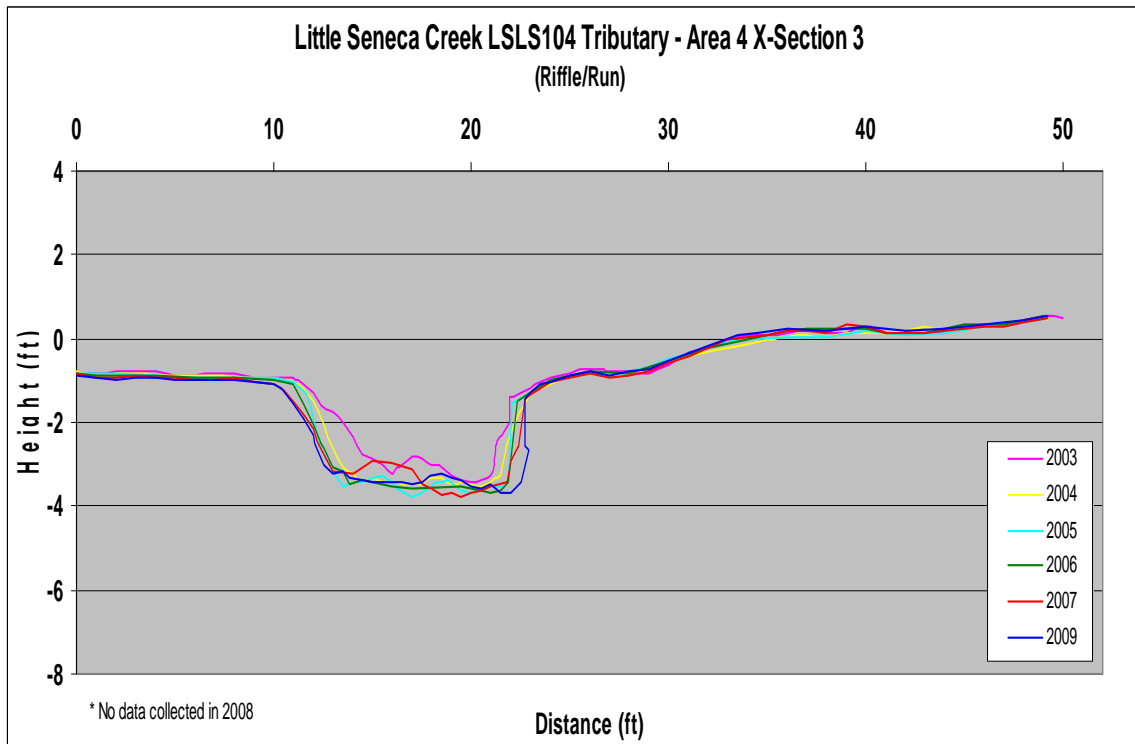
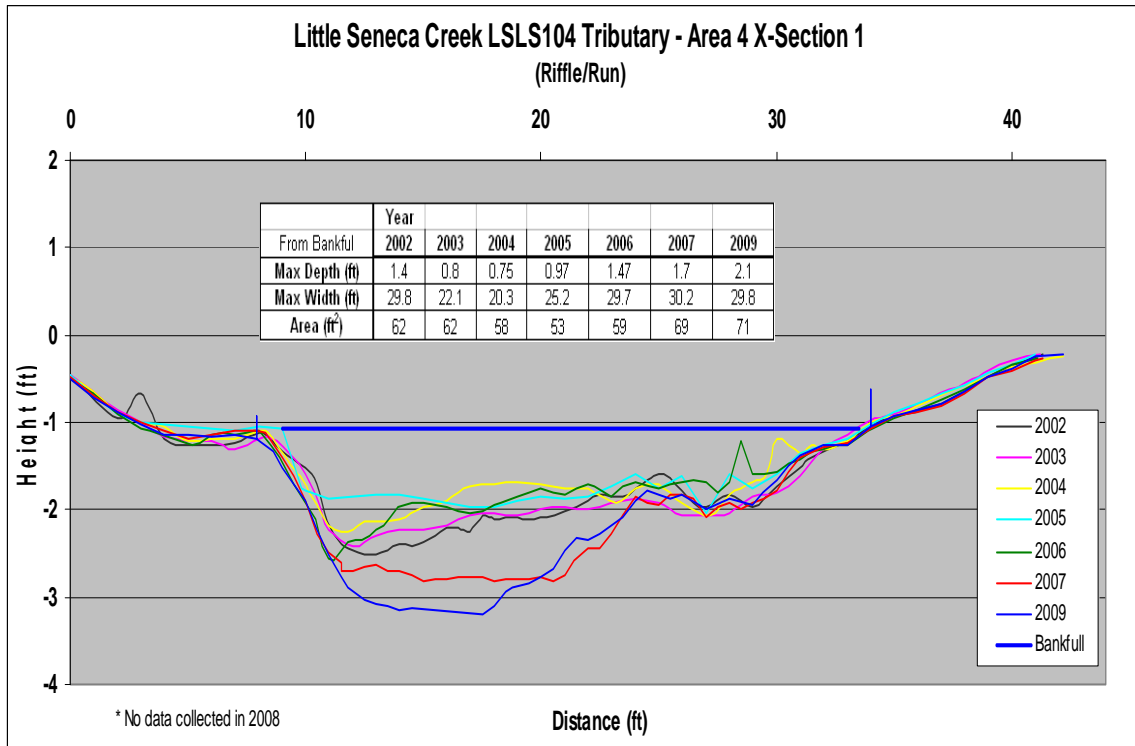
Preliminary results are presented in the Technical Appendix for cross sections established in the most downstream sections within the Newcut Road Neighborhood test area (area 4), the Little Bennett control (Sopers Branch area 4), and the Germantown control (area 2). All cross sections used in this comparison were measured in riffle/run stream areas. Riffle/run areas serve as grade control for the stream.

On average, cross sections from the Newcut Road Neighborhood area experienced channel aggradation corresponding to the most active years of construction (2004, 2005 and 2006), and then channel degradation and some widening in 2007 and 2009 as this area of the Newcut Road Neighborhood neared final elevations and stabilization (Fig.III-H8). On the other hand, the Little Bennett Regional Park (Fig.III-H9) and Germantown Crystal Rock cross sections show little yearly change.

Changes in cross section are most obvious in the lower half of each profile, corresponding to levels that frequent storms would impact. Surface hydrology analysis has shown that the amounts of annual runoff infiltrating the ground has decreased, annual stream runoff has increased and that the Newcut Road Neighborhood stream had a more rapid response to storms. These changes to surface hydrology would cause the stream to move more sands and gravels in the channel and aggrade (Paul and Meyer 2001). The S&EC BMPs on the development sites were functioning as designed and maintained. However, even the best maintained and functioning S&EC BMP are not 100% effective in removing fine clays and silts.

Evaluation of sinuosity over time documents a difference between the test and control stations. Sinuosity is the ratio between the length of the stream and the corresponding length of the stream valley. A ratio of 1:1 would indicate a very straight and often channelized stream. Sinuosity indices for the Newcut Road tributary reveal the stream has straightened over time (ratios went from 1.4 to 1.0 in just four years (Table III-H2). The sinuosity of the Sopers Branch channel has remained fairly similar. This would be consistent with the increased annual runoff of the Newcut Road Neighborhood stream.

Changes in stream morphology would largely be a result of the changes reported on stream hydrology. There are many comparison studies yet to be done between the test and control areas to evaluate the effectiveness of stormwater BMPs. Results presented herein are preliminary as the S&EC control devices have not been converted to SWM structures. However, from the preliminary results, the construction phase of development has impacted the 104 tributary channel morphology due to channel straightening, down-cutting, and enlargement. Final conclusions will be made once the development process has been completed in the test areas and when the S&EC BMPs have been converted to final SWM BMPs.



**Figure III-H8. Representative cross sections from Newcut Road Neighborhood, Little Seneca 104 Tributary test location, Area 4. Cross sections are both measured in Riffle/run features.**

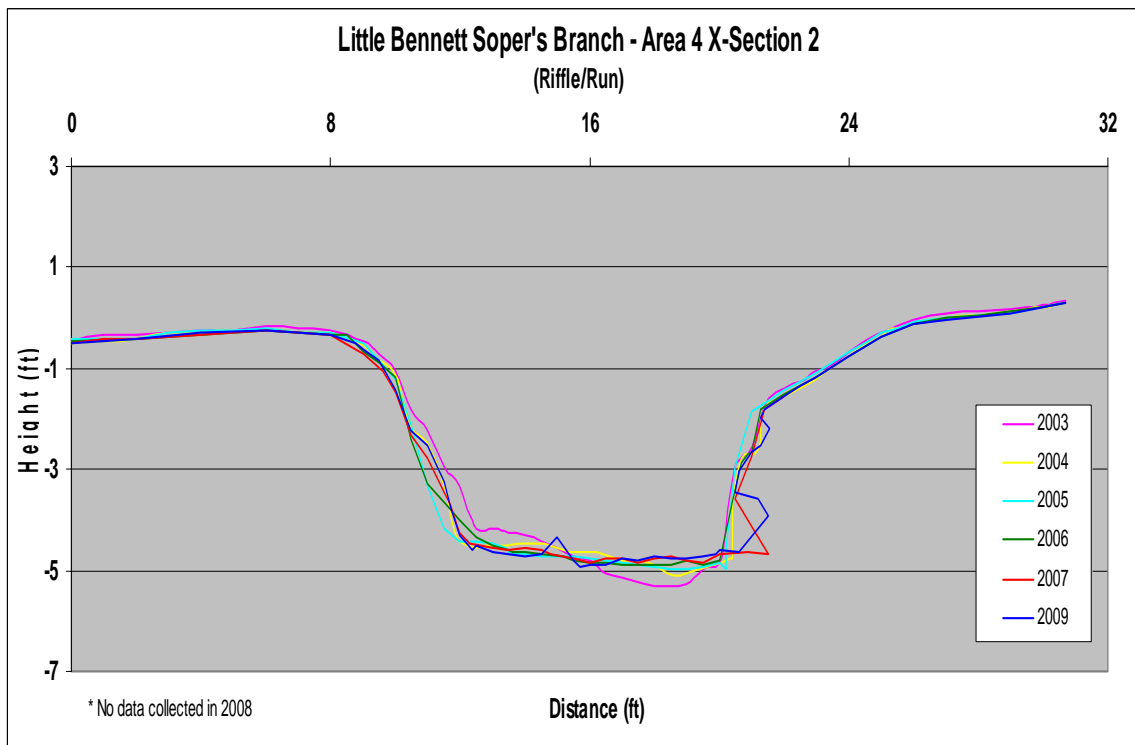
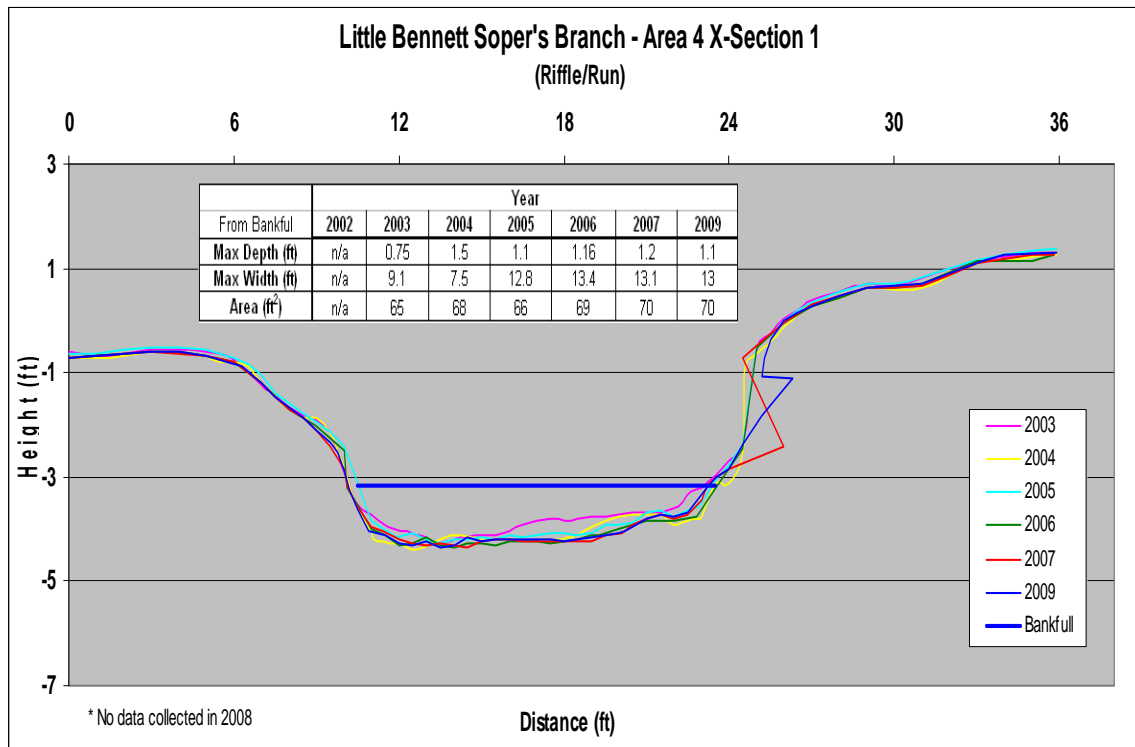


Figure III-H9 Representative cross sections from Little Bennett Creek, Sopers Branch control location, Area 4. Cross sections both measured in Riffle/run features.

**Table III-H2. Sinuosity indices and survey information for Newcut Road Little Seneca 104 tributary test area, Little Bennett Soper's Branch control area, and Germantown Crystal Rock control area. Data are shown for furthest downstream areas within each test and control.**

	<b>Sinuosity</b>					
Year	'03	'04	'05	'06	07	09
LSLS104 A4	1.4	1.4	1.3	1.0	1.0	1.2
LBSB201 A4	1.1	1.1	1.0	1.2	1.2	1.1

	<b>Total Longitudinal Slope (%)</b>					
Year	'03	'04	'05	'06	07	09
LSLS104 A4	1.3	1.3	1.3	1.3	1.4	1.2
LBSB201 A4	1.1	0.9	1.5	1.4	1.4	1.5

<b>CLARKSBURG- Bankfull Channel Particle Size (D50) at LSLS104 and LBSB201</b>												
	<b>D50 (mm)</b>						<b>Particle</b>					
Year	'03	'04	'05	'06	'07	09	'03	'04	'05	'06	'07	09
LSLS104 A4	8.2	5.7	5.7	7.1	8.5	13	Med. Gravel	Fine Gravel	Fine Gravel	Fine Gravel	Med. Gravel	Med. Gravel
LBSB201 A4	16	0.06	8.7	14	9.2	6.9	Coarse Gravel	Silt/ Clay	Med. Gravel	Med. Gravel	Med. Gravel	Fine Gravel

### ***Habitat***

A Rapid Habitat Assessment (RHAB) is used during spring and summer sampling at all stream stations monitored in the county. An individual score is selected within categories of *optimal*, *sub-optimal*, *marginal*, and *poor* and a total score (out of 200) is generated for the station. A summary of the RHAB methods used by DEP is provided in the Technical Appendix (Section TA-5.1).

There is no clear trend in the three SPAs and no substantial difference was found between the test and control areas.

### ***Summary***

#### **Hydrology**

The greater the impervious surfaces that cover a watershed, the smaller the amount of precipitation that infiltrates into the groundwater system and the more precipitation directly runs off into streams. This is through the grading and compaction activities that currently occur as a result of development. Naturally pervious soils and a diffuse infiltration system are altered and/or lost through the cut and fill requirements currently being followed to develop a property.

**The natural hydrology of the Newcut Road Neighborhood in Clarksburg has been altered dramatically by the development process. The ability of BMPs to mimic pre-construction hydrologic conditions will be evaluated once the construction process has been completed and the SWM BMPs are online and functioning as designed.**

On average, the overall amount of precipitation infiltrating into the ground or lost via evapotranspiration has steadily declined in the Newcut Road Neighborhood Tributary while remaining fairly constant in the Sopers Branch control. The overall amount of precipitation that directly entered the Newcut Road Neighborhood Tributary test area also increased over this same time period as compared to the Sopers Branch.

**SWM BMPs in SPAs are designed to promote infiltration and recharge. Not all structures are online and fully-functional in the Newcut Road Neighborhood.**

### **Habitat**

The data that have been collected through the Rapid Habitat Assessment do not show major differences in habitats of streams that lie within watersheds with land development projects versus those that are in watersheds with very little or no land development activities. The assessment may be too coarse to detect differences; the geomorphic surveys provide a quantitative method to measure differences between control and test areas.

### **I. Program Funding:**

The Permit requires that the County submit annual expenditures for the capital, operation, and maintenance expenditures in database format specified in Permit Section Part IV. The required database is included in electronic format on CD in Attachment A.

During FY10, the reported costs associated with Permit requirements was \$27,415,836. This includes an estimate for trash and litter management based on FY09 numbers because comparable FY10 numbers were not readily available. It does not include DOT costs associated with inlet cleaning or property management or DGS costs associated with property management because these agencies do not have a way to separate out these specific costs from their other operating costs.

## **J. TMDLS**

The DEP during FY10 had identified sufficient projects through its CIP program to meet the watershed restoration goal to add stormwater management for runoff from 20% of the impervious area not currently treated to the MEP. An initial calculation during 2009 had determined this goal to be 4,100 impervious acres.

In addition to the numeric watershed restoration goal, the Permit requires the development of implementation plans to meet wasteload allocations for any EPA-approved TMDLs and also for trash and litter reduction in support of the Potomac Trash-Free Treaty and to establish a public outreach and stewardship workplan. All four of these elements are reflected in the Montgomery County's draft Comprehensive County Implementation Strategy (the Strategy) which has been submitted with this Annual Report. The Strategy provides the framework for project and program implementation during and beyond the current Permit cycle, including associated CIP and non-CIP estimated costs.

Also submitted are the draft Watershed Implementation Plans and Implementation Plan supporting documents. Electronic copies of all the documents have been included on CD in Attachment A and can also be found on the Montgomery County Department of Environmental Protection website at:

<http://www.montgomerycountymd.gov/dectmpl.asp?url=/content/dep/water/wris.asp#plans>

In development of the Implementation Plans, the County was divided into eight watersheds based on the eight-digit USGS hydrologic unit codes (HUCs). Draft Implementation Plans are provided for all or a portion of seven of the eight watershed groupings, all of which have one or more EPA-approved TMDLs. Pre-assessments, i.e. desktop review of existing data, were completed for those watersheds that do not currently have a complete watershed assessment and do not have an EPA-approved TMDL. Figure III-J1. shows those watersheds with MDE identified impairments and EPA-approved TMDLs.

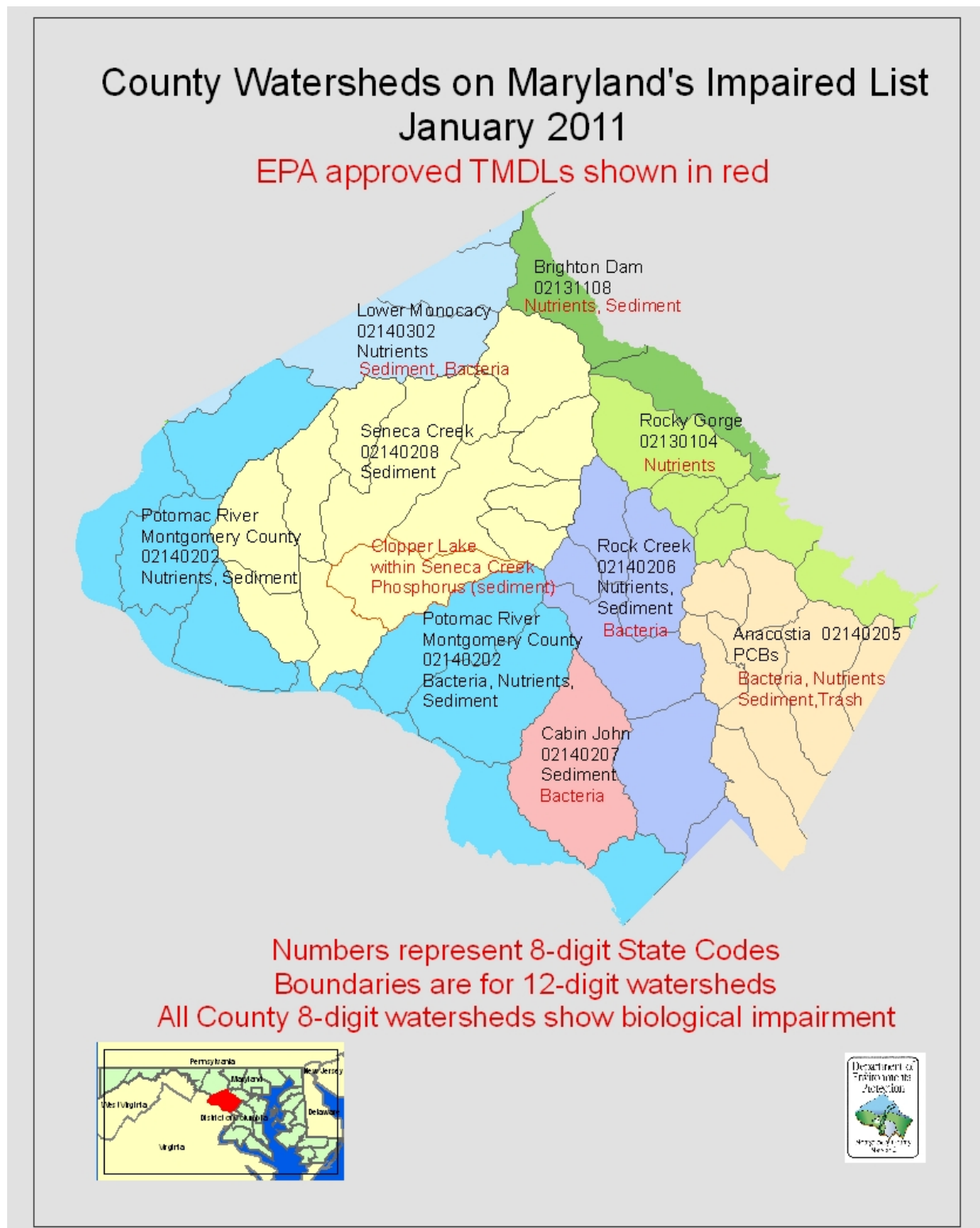


Figure III-J1. County Watersheds with impairments and EPA approved TMDLs.

## Implementation Plan Summaries

The following provides a summary of the watershed specific implementation plans.

*Anacostia* – For the first permit cycle (through 2015), a priority was placed on full implementation of completed, high, and low priority projects. Next, implementation of a third of the other potential projects was targeted, as a large number of these were identified in conjunction with the USACE's Anacostia Watershed Restoration Plan efforts. ESD was emphasized on both public (10%) and private property (10%). Finally, outreach (25%) and stream restoration (12%) are targeted for pollutant load reduction but are not credited towards impervious cover credit. In future permit cycles, the remainder of the other potential projects are targeted along with ESD and a limited amount of riparian reforestation for impervious cover and pollutant load reduction. Outreach and stream restoration are significant strategies pursued for load reduction benefits. Nutrient and sediment MS4 permit area WLAs are met by 2030, but bacteria load reduction does not meet MS4 permit area WLA compliance. The remaining bacteria reduction is believed to be associated with urban wildlife sources. Unless intense urban wildlife management practices are implemented, this remaining load reduction will not be possible.

*Rock Creek* – For the first permit cycle (through 2015), a priority was placed on full implementation of complete, high and low priority projects. Next, 25% implementation of other potential projects was targeted. ESD was emphasized on both public (10%) and private property (10%), with private property implementation being linked to Rainscapes Program success. Finally, outreach (100%) and stream restoration (22%) are targeted for pollutant load reduction but are not credited towards impervious cover credit. In future permit cycles, the remainder of the other potential projects are targeted along with ESD and riparian reforestation for impervious cover and pollutant load reduction. Stream restoration is a significant strategy pursued for load reduction benefits. The bacterial load reduction does not meet MS4 permit area WLA compliance. However, the remaining bacterial load is believed to be associated with urban wildlife sources. Unless intense urban wildlife management practices are implemented, this remaining load reduction will not be possible.

*Cabin John Creek* – Similar to the other two more urban watersheds in the County, during the first permit cycle (through 2015), a priority was placed on full implementation of complete, high and low priority projects. Fewer opportunities exist overall compared to the Anacostia and Rock Creek. Next, 25% implementation of other potential projects was targeted. ESD was emphasized on both public (10%) and private property (10%). Finally, outreach (100%) was targeted for pollutant load reduction but not credited towards impervious cover credit. No riparian reforestation or stream restoration was targeted due to limited or no opportunities. In future permit cycles, the remainder of the other potential projects are targeted along with ESD and some riparian reforestation for impervious cover and pollutant load reduction. The bacteria load reduction meets MS4 permit area WLA compliance by 2025.



*Muddy Branch/Watts Branch* – During the first permit cycle (through 2015), a priority was placed on full implementation of complete, high and low priority projects. Fewer opportunities exist overall compared to the Anacostia and Rock Creek Watersheds. No other strategies were pursued as there are no existing TMDLs in the Muddy Branch/Watts Branch subwatersheds. In future permit cycles, previously identified stream restoration projects are implemented for pollutant load reduction.

*Great Seneca Creek* – This watershed implementation plan is unique in that it includes the small Clopper Lake subwatershed which has a TMDL for phosphorus. Even with the TMDL, there are limited identified opportunities to pursue in the Clopper Lake subwatershed, in part due to the limited area of the subwatershed within the County MS4 permit area. During the first permit cycle (through 2015), a priority was placed on full implementation of complete, high and low priority projects within Great Seneca Creek subwatershed. No opportunities exist for these strategies in Clopper Lake. However, full outreach was applied in Clopper Lake in the first permit cycle. In future years, other potential projects, ESD on public and private property and a small amount of riparian reforestation (in Clopper Lake) is pursued. The Clopper Lake WLA for phosphorus within the MS4 permit area is met.

*Patuxent* – During the first permit cycle (through 2015), a priority was placed on full implementation of complete, high and low priority projects. Far fewer opportunities exist overall compared to the Anacostia and Rock Creek. A limited amount of ESD on private land and stream restoration was pursued. Finally, outreach (100%) was targeted for pollutant load reduction (primarily nutrients) but not credited towards impervious cover credit. No riparian reforestation was targeted within the MS4 Permit area due to cost effectiveness in the Rocky Gorge subwatershed and limited opportunities in the Triadelphia subwatershed. In future permit cycles, ESD on private and public land is pursued more substantially as is stream restoration. A limited amount of riparian reforestation achieves some impervious cover and pollutant load reduction. The Rocky Gorge phosphorus WLA within the MS4 permit area is met easily and the Tridelphia phosphorus WLA is also met, but with a longer timeframe needed for compliance.

*Lower Monocacy Creek* – Lower Monocacy Creek is the most rural watershed in the County and has the least amount of area subject to the County MS4 permit. In addition, there are no pre-identified restoration projects within the watershed. Therefore, during the first permit cycle (through 2015), only a very small amount (5%) of private property ESD is pursued. It is not until the second permit cycle that more focus is placed on private and public ESD as well as stream restoration and programmatic strategies such as street sweeping to target sediment loads associated with the TMDL. In future permit cycles, stream restoration is pursued for pollutant load reduction. The sediment WLA within the MS4 permit area is projected to be met around 2025.

## **PART V. SPECIAL PROGRAMMATIC CONDITIONS**

### **A. Tributary Strategy**

The County is continuing to work with State agencies and other affected stakeholders for the development of the Phase 1 and Phase 2 WIPs to meet Chesapeake Bay restoration goals. In January 2011, the DEP agreed to take the lead to convene a meeting of local affected stakeholders and work with the State to develop the Phase 2 WIPs for the entire County. As of February 16, 2011, the MDE has not provided the loads allocation by source necessary for the Montgomery County stakeholders to begin next steps in developing the WIP.

In developing the draft Strategy for the Permit, the DEP used the urban stormwater reductions published in the Maryland Phase 1 WIPs as targets for reductions from the County's baseline loads for nitrogen, phosphorus, and sediment for Bay restoration. Summary of the Countywide analyses is shown in Table IV-1.

The Countywide effort was driven by impervious cover treatment targets and Chesapeake Bay TMDL 2017 and 2020 reduction targets associated with sediment and nutrients for urban MS4s. For impervious cover, it was assumed that a 20% target would be required for each five-year permit cycle. The Bay TMDL targets for urban MS4 areas were easily met for all pollutants in 2017 and easily met for nitrogen and sediment but more difficult to meet for phosphorus in 2020. The Strategy also reflects the implementation of 'ESD to the MEP' as required in the Permit.

Table IV-A1. Implementation Rate Compared To Pollutant Loads Reductions

Watershed	Fiscal Year	Permit/TMDL Targets						
		2015	2017	2020	2025	2030	2017	2020
Countywide	Impervious Treated (acres)	4,302	6,014	7,722	10,518	11,154	6,008	7,723
	ESD (% Impervious)	18%	34%	47%	60%	63%		
	Cost (Million \$)	305	622	987	1,687	1,884		
	ESD (% Cost)	53%	66%	70%	80%	80%		
	Nitrogen	18%	25%	36%	46%	51%	9%	20%
	Phosphorus	17%	23%	34%	44%	46%	12%	34%
	Sediment	23%	34%	54%	60%	62%	20%	37%
	Bacteria	11%	15%	20%	28%	30%		
	Trash	18%	26%	33%	41%	42%		

## B. Comprehensive Planning

The Permit requires the County to "cooperate with the Maryland National Capital Park and Planning Commission (Commission) during the development and completion of the Water Resources Element (WRE) of the Commission's comprehensive land planning process as required by the Maryland Economic Growth, Resource Protection and Planning Act of 1992 (Article 66B, Annotated Code of Maryland)". The County was an active partner during the development of the WRE Functional Plan, providing data and technical review for the water, wastewater, and stormwater requirements. The WRE Functional Plan was approved and adopted by the Montgomery County Planning Board in September 2010. The report is available in electronic format at:  
[http://www.montgomeryplanning.org/environment/water\\_resources\\_plan/documents/WaterResourcesfunctionalplan\\_web.pdf](http://www.montgomeryplanning.org/environment/water_resources_plan/documents/WaterResourcesfunctionalplan_web.pdf)

The County has continued its cooperation with the Commission through the interagency workgroup for the Permit-required evaluation of County codes to assure 'ESD to the MEP' and during the development of local ordinance changes to meet the requirements of the State's Stormwater Management Act of 2007. The County agencies are routine participants for review and comment as Sector Plan and Master Plan documents are being developed.